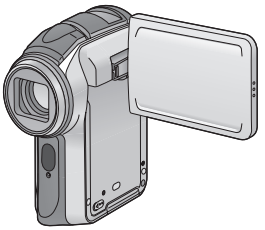
Panasonic



Operating Instructions

SD Video Camera

Model No. **SDR-S150**



Before connecting, operating or adjusting this product, please read the instructions completely.

SDHC™ CLASS 2 PictBridge HI-SPEED CERTIFIED USB LEICA DICOMAR

For USA assistance, please call: 1-800-272-7033 or, contact us via the web at: http://www.panasonic.com/contactinfo

PP

VQT0X39

Before opening the CD-ROM package, please read the following.

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Information for your safety

WARNING
TO REDUCE THE RISK OF FIRE OR SHOCK HAZARD AND ANNOYING INTERFERENCE, USE ONLY THE RECOMMENDED ACCESSORIES AND DO NOT EXPOSE THIS EQUIPMENT TO RAIN OR MOISTURE. DO NOT REMOVE THE COVER (OR BACK); THERE ARE NO USER SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

THE SOCKET OUTLET SHALL BE INSTALLED NEAR THE EQUIPMENT AND SHALL BE EASILY ACCESSIBLE.

CAUTION
Danger of explosion if battery is incorrectly replaced.
Replace only with the same or equivalent type recommended by the manufacturer.
Dispose of used batteries according to the manufacturer's instructions.

IMPORTANT

■ Carefully observe copyright laws

Whatever you have recorded and created can be used for your personal entertainment only. Under copyright laws, other materials cannot be used without obtaining permission from the holders of the copyrights.

- **Injury or material damage resulting from any kind of use that is not in accordance with the operating instructions are the sole responsibility of the user.**
- If the SD Video Camera is used continuously for a long time or used at a high ambient temperature, red, blue, green or white dots may appear on the screen and be recorded on a still picture. This is due to the temperature of the SD Video Camera increasing. This is not a malfunction. Under this condition, turn the SD Video Camera off and leave it for a while.
- The manufacturer shall in no event be liable for the loss of recordings due to malfunction or defect of this SD Video Camera, its accessories or Memory Card.
- Note that the SD Video Camera may not play the data recorded or created on another product and another product may not play the data recorded on the SD Video Camera.
- The nameplate of the SD Video Camera is fixed on the bottom of the battery compartment.

FCC Note:
This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

FCC Caution: To assure continued compliance, follow the attached installation instructions and use only shielded interface cables with ferrite core when connecting to computer or peripheral devices.
Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

Trade Name: Panasonic
Model No.: SDR-S150
Responsible party:
Panasonic Corporation of North America
One Panasonic Way, Secaucus, NJ 07094
Support Contact:
Panasonic Consumer Electronics Company
1-800-272-7033

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

FC Panasonic
SDR-S150

A lithium ion/polymer battery that is recyclable powers the product you have purchased. Please call 1-800-8-BATTERY for information on how to recycle this battery.

< For USA-California only >
This product contains a CR Coin Cell Lithium Battery which contains Perchlorate Material – special handling may apply.
See www.dtsc.ca.gov/hazardouswaste/perchlorate.

U.S. Patent Nos. 4,631,603, 4,577,216, 4,819,098, and 4,907,093.
This product incorporates copyright protection technology that is protected by U.S. patents and other intellectual property rights. Use of this copyright protection technology must be authorized by Macrovision, and is intended for home and other limited consumer uses only unless otherwise authorized by Macrovision. Reverse engineering or disassembly is prohibited.

-If you see this symbol-

Information on Disposal in other Countries outside the European Union



This symbol is only valid in the European Union.
If you wish to discard this product, please contact your local authorities or dealer and ask for the correct method of disposal.

Introduction

Dear Customer,
We would like to take this opportunity to thank you for purchasing this Panasonic SD Video Camera. Please read these Operating Instructions carefully and keep them handy for future reference.

■ Try out the SD Video Camera

Be sure to try out the SD Video Camera when you have not used it for a long period of time, or before recording important data, to check that the picture and sound are recorded correctly.

■ About the photographs and illustrations in these operating instructions

Please note that the actual controls and components, menu items, etc. of your SD Video Camera may look somewhat different from those shown in the illustrations in these Operating Instructions.

■ Pages for reference

Pages that you should refer to are shown as **(P00)** .

■ Use only the recommended accessories.

- Do not use any other multi cables and USB cables except the supplied one.
- When you use headphones which are sold separately, please make sure the total length of the headphones including the headphone adaptor is less than 3 m (9.9 feet).

■ Cards that you can use with this unit

SD Memory Card and SDHC Memory Card

For the purposes of these operating instructions, the following cards are referred to as "the SD card".

– SD Memory Card (from 8 MB to 2 GB)
– SDHC Memory Card (4 GB (Maximum))

Please confirm the latest information on the following website.
(This website is in English only.)

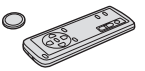
http://panasonic.co.jp/pavc/global/cs/e_cam

- **Refer to page 35 for information about the kinds of SD Cards that can be used for motion picture recording.**
- If the SD Card is formatted on other equipment, it may take longer to record or you may not be able to use the SD Card. In this case, format the SD Card on this unit. **(Do not format it on a PC etc.)**
- This unit supports SD Memory Cards formatted in FAT12 system and FAT16 system based on SD Memory Card Specifications and SDHC Memory Cards formatted in FAT32 system.

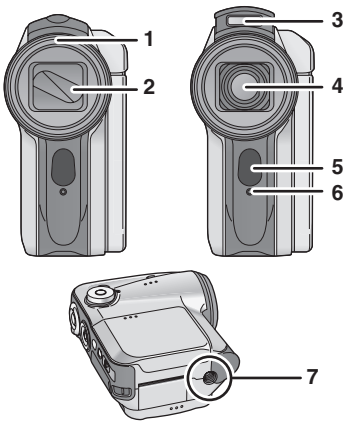
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- Panasonic will in no way be liable for any damages sustained directly or indirectly from the use of this product or from any trouble occurring therein.
- Panasonic will also in no way be liable for any losses of data caused by this product.
- For the purposes of these operating instructions, the battery pack is referred to as "the battery".
- SDHC Logo is a trademark.
- Microsoft®, Windows® and DirectX® are either registered trademarks or trademarks of Microsoft Corporation in the United States and/or other countries.
- Leica is a registered trademark of Leica microsystems IR GmbH and Dicomar is a registered trademark of Leica Camera AG.
- Microsoft product screen shot(s) reprinted with permission from Microsoft Corporation.
- Other names of systems and products mentioned in these instructions are usually the registered trademarks or trademarks of the manufacturers who developed the system or product concerned.

Accessories

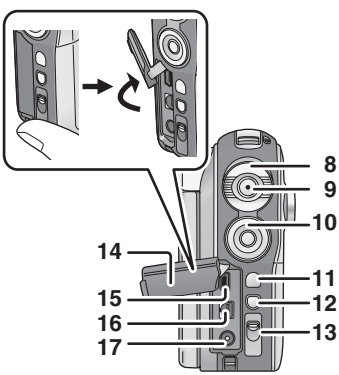
Check the accessories before using this unit.

SD Memory Card (2 GB) RP-SDR02G 	**Wireless remote control** N2QACC000009 **Button-type battery** CR2025 
Battery pack CGA-S303 	**Hand strap** VFC4144 
AC cable K2CA2CA00029 	**Attachable grip** VYC0948
	USB cable VFA0453-A
AC adaptor VSK0681	**Headphone cable** K2KZ99Z00002
Multi cable K2KZ9CB00001	**CD-ROM**

Optional Accessory **Battery Pack** CGA-S303

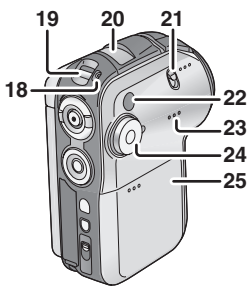


1 **Lens hood (P11)**
2 **Lens cover**
3 **Built-in flash (P57)**
4 **Lens (LEICA DICOMAR)**
5 **Remote Control Sensor (P14)**
6 **Indication lamp (P33)**
7 **Tripod mount (P11)**
- You can also attach the attachable grip.

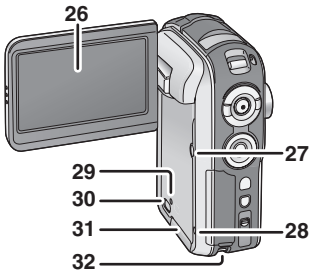


8 **Zoom lever [W/T] (P37)**
Volume lever [+VOL−] (P61)
9 **Record button (P34, 53)**
10 **Cursor button (P23)**
- Press up, down, left or right to select items.
- Press the button in the center to enter the selection.

11 **Menu button [MENU] (P27)**
12 **Delete button [🗑] (P65)**
13 **Mode select switch [AUTO/MANUAL/FOCUS] (P33, 46 to 51)**
14 **Terminal cover (P70, 73, 83)**
15 **USB terminal [ψ] (P70, 83)**
16 **Multi-connector [MULTI] (P12, 73)**
17 **DC input terminal [DC IN 9.3V] (P18)**



18 **Status indicator (P18 to 20)**
19 **Power switch [ON/OFF] (P19)**
20 **Microphone (built-in, stereo)**
21 **Flash lever [OPENß] (P57)**
22 **White balance sensor (P50)**
23 **Speaker (P61)**
24 **Mode dial (P21)**
25 **Battery cover (P17)**



26 LCD m l)

Due to lim roduction technology ome tiny bright or dark spots nitor screen. However, t unction and does not affect the r e.

27 Power [POWER LCD] (P31)
28 Reset SET] (P105)
29 Card a p [ACCESS] (P16)
30 Card s ever (P15)
31 Card s (P15)
32 Strap f 11)

Lens hood

❶ In order to remove the lens hood, rotate it counter-clockwise.
❷ In order to fit it, put into slot Ⓐ, and then rotate it clockwise.



Hand strap fixture

We recommend using the hand strap (supplied) to prevent the unit from dropping.

❶ Hand strap



Tripod mount

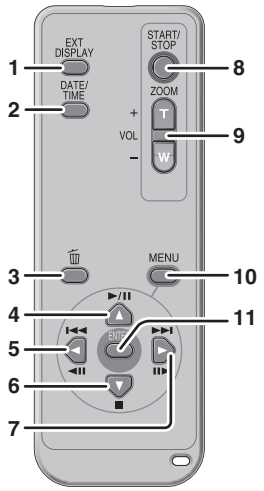
This hole is for attaching the attachable grip (supplied) to this unit or attaching this unit to a tripod (optional).
It is easier to hold this unit if you attach the attachable grip to the tripod mount.

■ Attachable grip

❶ Attach the hand strap to the strap fixture.
❷ Attach the attachable grip string to the hand strap string.
❸ Attach the attachable grip to the tripod mount.



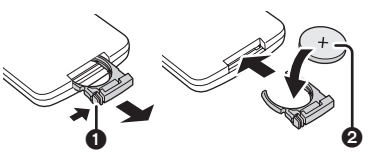
Remote control



1 **On-screen display button [EXT DISPLAY] (P74)**
2 **Date/time button [DATE/TIME] (P30)**
3 **Delete button [🗑] (P65)**
4 **▲: Playback/Pause button [▶/❚❚] (P14, 60, 63)**✳
5 **◀: Fast-rewind button [|◀◀] (P14, 60, 63)**✳
6 **▼: Stop button [■] (P14, 60, 63)**✳
7 **▶: Fast-forward button [▶▶|] (P14, 60, 63)**✳
8 **Recording start/stop button [START/STOP]**✳
9 **Zoom/volume button [T]/[W]**✳
10 **Menu button [MENU] (P14)**
11 **Enter button [ENTER] (P14)**

✳ **Recording operations, playback operations and volume adjustment**
These buttons work in the same way as the corresponding buttons on this unit.

■ Install a button-type battery (supplied) in the remote control



1) While pressing the stopper ❶, pull out the battery holder.
2) Set the button-type battery with its (+) mark facing upward ❷ and get the battery holder back in place.

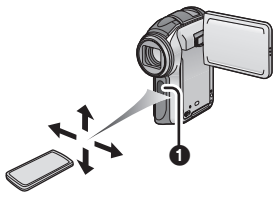
■ About the button-type battery

- When the button-type battery runs down, replace it with a new battery (CR2025). The battery typically lasts about one year; the actual life may be less with heavy use.
- Keep the button-type battery out of the reach of children.

Warning
Danger of explosion if battery is incorrectly replaced.
Replace only with the same or equivalent type recommended by the equipment manufacturer. Discard used batteries according to manufacturer's instructions.
Risk of fire, explosion and burns. Do not recharge, disassemble, heat above 100 °C (212 °F) or incinerate.
Keep the Button-Type battery out of the reach of children. Never put Button-Type battery in mouth. If swallowed, call your doctor.

Replace battery with Panasonic PART NO. CR2025 only. Use of another battery may present a risk of fire or explosion.
Caution: Battery may explode if mistreated.
Dispose of used battery promptly. Keep away from children.
Do not recharge, disassemble or dispose of in fire.

■ Remote control usable range



The distance between the remote control and the unit: Within approx. 5 m (15 feet)
Angle: Approx. 10° up and 15° down, left, and right
❶ Remote control sensor

- The remote control is intended for indoor operation. Outdoors or under strong light, this unit may not operate properly even within the usable ranges.

■ Operating with remote control

The menu screen transition is the same as when the buttons on the main unit are used. (P27)



1) Press the [MENU] button.
2) Select a menu item.

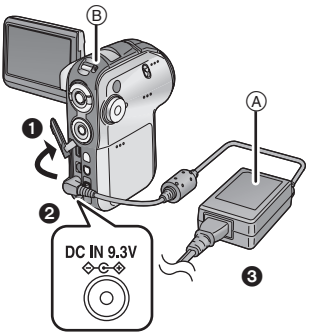
- The [▲, ▼, ◄, ►] buttons and the [ENTER] button can be used in the same way as pressing the cursor button on this unit up, down, left and right.

3) Press the [MENU] button to exit the menu screen.

Charging the Battery

When this unit is purchased, the battery is not charged. Charge the battery before using this unit.

◇ **Set the power switch to [OFF]. (P19)**



Connect the AC adaptor (supplied) Ⓐ to this unit and the AC outlet.

1. Open this unit's terminal cover.
2. Connect the AC adaptor to this unit's DC input terminal [DC IN 9.3V].
3. Connect the AC mains lead to the AC adaptor, then the AC outlet.

The status indicator Ⓑ starts blinking in red at intervals of about 2 seconds to signal that charging has commenced. Charging is completed when the lamp goes off.

- If the status indicator blinks faster or slower, refer to page 110.

The AC Cable is for use with this unit only. Do not use it with other devices or use the AC Cable for other devices with this unit.

■ Connecting to the AC outlet

If you turn on this unit while charging the battery using the AC adaptor, you can use the power supplied from the AC outlet to power the unit for use. (While it is in use, the battery will not be charged.)

■ Charging time and recordable time

The times shown in the tables below are for when the temperature is 25 °C (77 °F) and the humidity is 60%. If the temperature is higher or lower than 25 °C (77 °F), the charging time will become longer.

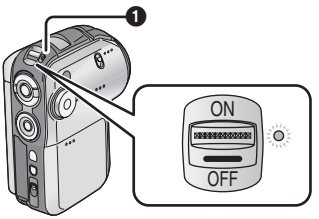
- The intermittent recordable time refers to recordable time when the recording and stopping operations are repeated. In reality, it may be shorter than this.

Battery model number	Voltage/ capacity	Charging time	Maximum continuously recordable time	Intermittent recordable time
Supplied battery/ CGA-S303 (optional)	7.4 V/ 760 mAh	Approx. 1 h 30 min	Approx. 1 h 20 min	Approx. 45 min

- "1 h 30 min" indicates 1 hour 30 minutes.

- The recordable time will become shorter when you use this unit with the LCD monitor lit up by pressing the [POWER LCD] button.
- The batteries heat up after use or charging. The unit and the SD card also heat up during use. This is not a malfunction.
- Along with the reduction of the battery capacity, the display will change: → → → → . If the battery discharges, then () will flash.

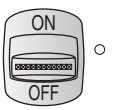
Turning the unit on/off



How to turn on the power

Set the power switch to [ON].

The status indicator 1 lights red and, in motion picture recording mode or still picture recording mode (P21), the lens cover opens.



How to turn off the power

Set the power switch to [OFF].

The status indicator goes out and the lens cover closes.

- If the LCD monitor is closed in motion picture recording mode or still picture recording mode (P21), the power turns off.

When the unit is not being used, set the power switch to [OFF].

Quick start

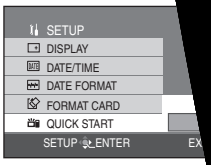
If quick start is set and then the LCD monitor is closed while the unit's power is still on, the unit will be ready for recording about 1.5 seconds after the LCD monitor is next opened.

Use the quick start function when stopping recording for a few moments.

- The quick start function can be set in the following cases.
 - – In motion picture recording mode, when the SD card is inside this unit
 - – In still picture recording mode, when the SD card is inside this unit

Turning the u

To set quick st



on Ⓑ, use the
elect
CK START], and
o [ON]. (P27)

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the unit goes

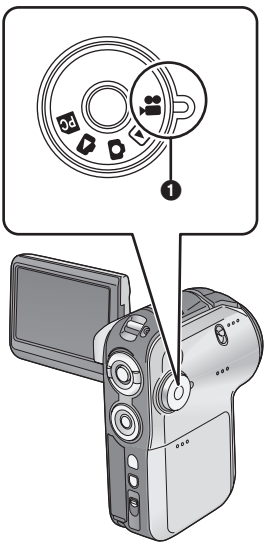
ed, the sta

To cancel quick start

Press the menu button, use th
[QUICK START]→[OFF]. (P

Selecting a mode

The Mode Dial is used to switch between recording and playback modes.
Rotate the mode dial slowly but surely.
Set the desired mode ❶.



Rotate the mode dial, and set the desired mode pictograph to the position shown in the illustration.

Motion picture recording mode (P34)

Use this to record motion pictures (MPEG2).
The unit can be used as a Web camera when it is connected to a PC.

Motion picture playback mode (P60)

Use this to play back motion pictures recorded with this unit.

Still picture recording mode (P53)

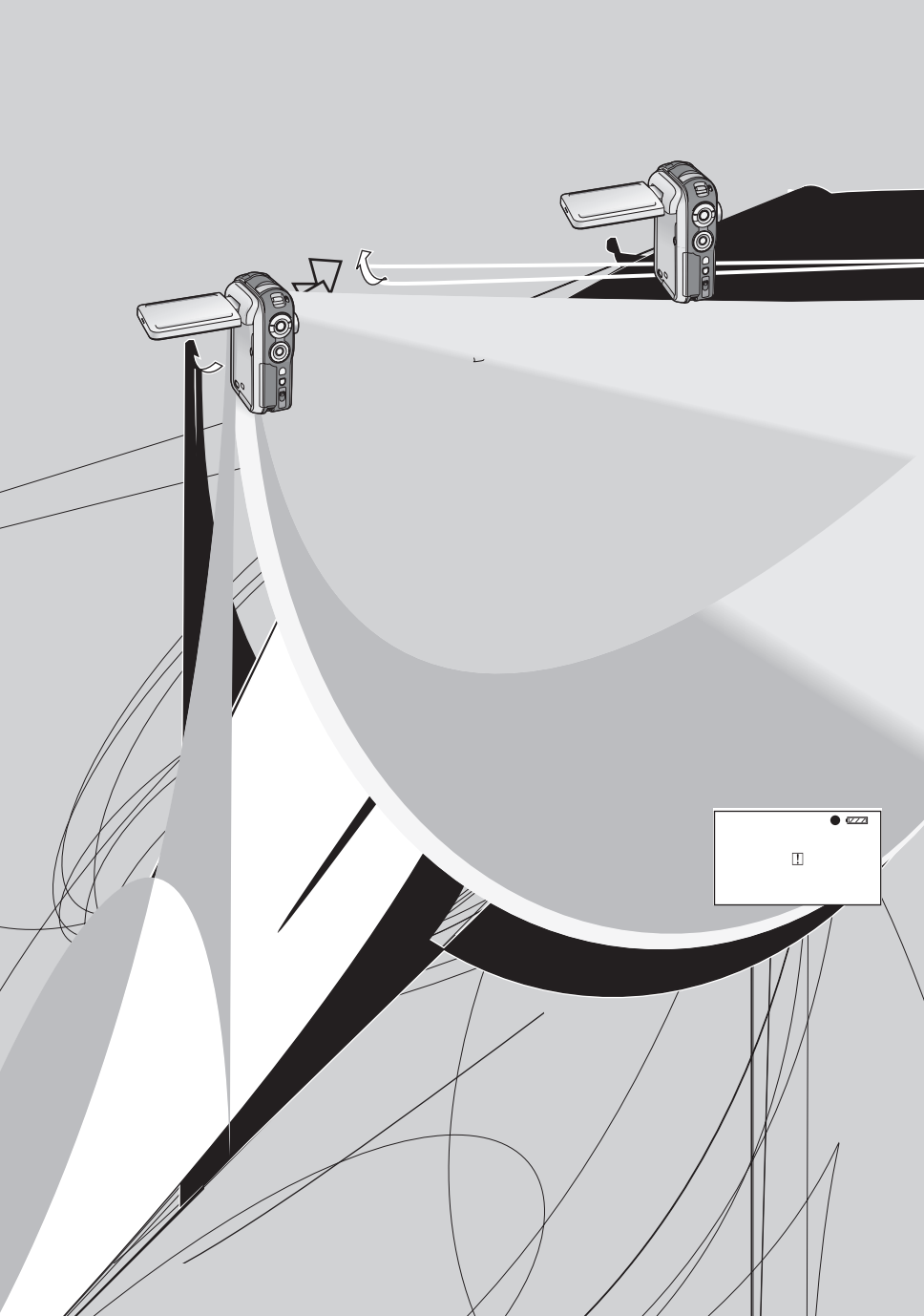
Use this to record still pictures (JPEG).
The unit can be used as a Web camera when it is connected to a PC.

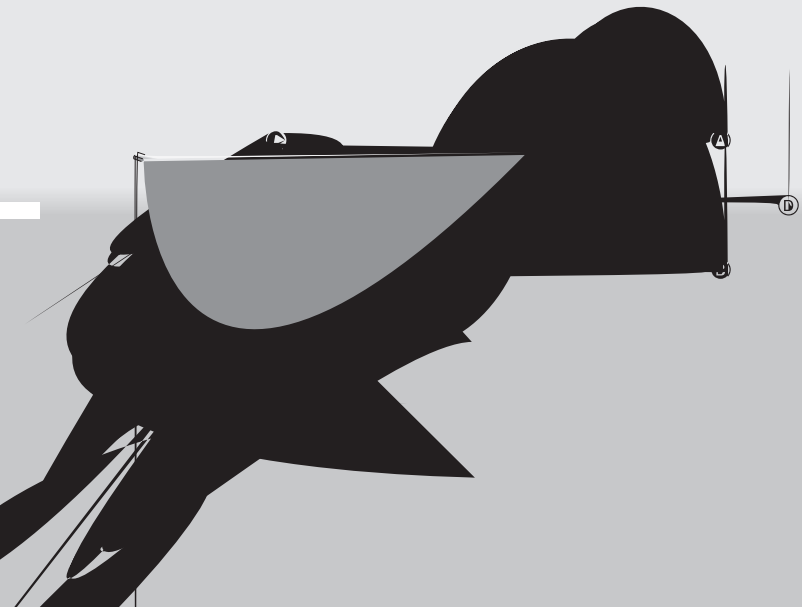
Still picture playback mode (P63)

Use this to play back still pictures recorded with this unit.

PC Connection mode (P76)

Use MotionSD STUDIO etc. to view an SD card's pictures on a PC or to import them to a PC.





Using the recording function

◇ When the mode dial is at the or position

1



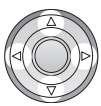
Press the button in the center.

❶ An operation icon appears on the LCD monitor.

While an operation icon is displayed, a blue border appears around the outside of the button in the center of the cursor button.

- Each time the button in the center is pressed, the indication changes.

2

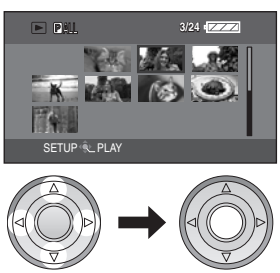


Press the cursor button up, down, left or right to make a selection.

Playback

◇ When the mode dial is at the or position

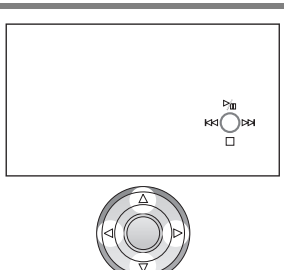
1



Press the cursor button up, down, left or right to select the scene, and then press the button in the center.

All the scenes are displayed and an operation icon automatically appears.

2



Press the cursor button up, down, left or right to proceed with the operation.

If the button in the center of the cursor buttons is pressed, the operation icon can be displayed or turned off.

About the operation icons which are displayed

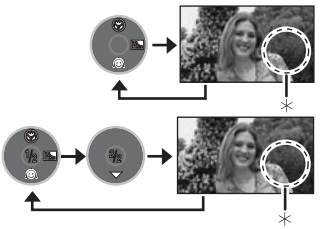
Each time the button in the center is pressed while an operation icon is displayed, the indication changes as shown below.

∗ The operation icon is off.

Motion picture recording mode

([AUTO/MANUAL/FOCUS] switch is set to [AUTO])

([AUTO/MANUAL/FOCUS] switch is set to [MANUAL])



Motion picture playback mode

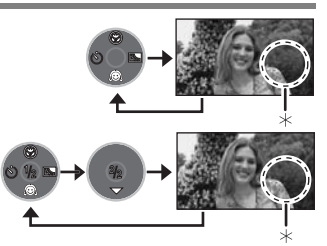
- The indication can also be changed during playback.



Still picture recording mode

([AUTO/MANUAL/FOCUS] switch is set to [AUTO])

([AUTO/MANUAL/FOCUS] switch is set to [MANUAL])

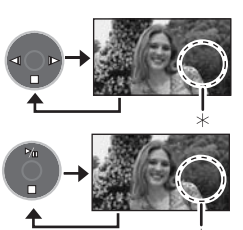


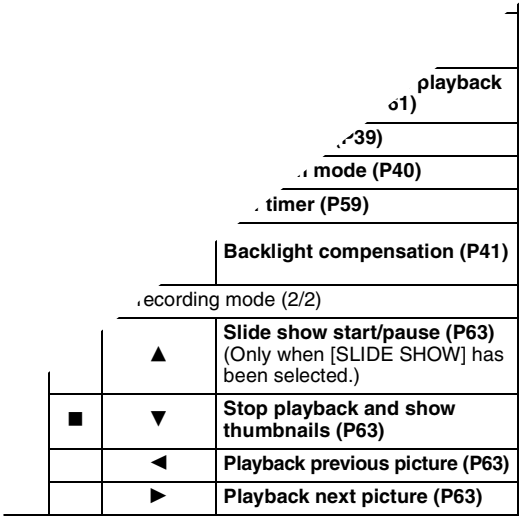
Still picture playback mode

- The indication can also be changed during playback.

(When [PICTURE] is selected)

(When [SLIDE SHOW] is selected)

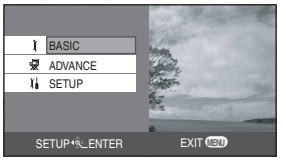



playback
61)
39)
mode (P40)
timer (P59)
Backlight compensation (P41)
ecording mode (2/2)
Slide show start/pause (P63)
(Only when [SLIDE SHOW] has been selected.)
▲
■
▼
Stop playback and show thumbnails (P63)
◄
Playback previous picture (P63)
►
Playback next picture (P63)

Using the menu screen

Refer to the “Menu list” (P93) for information about the menus.

1



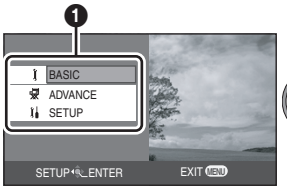


Press the [MENU] button.

The menu setting screen is displayed.
(The menu displayed differs depending on the position of the mode dial.)

- Do not switch the mode dial when the menu is displayed.
- The menu screen is not displayed during recording and playback. You also cannot record or play back while the menu screen is displayed.

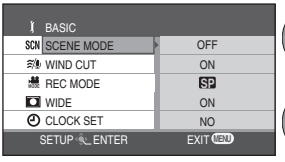
2

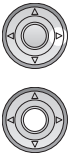




Press the cursor button up or down in order to select the desired top menu ❶.

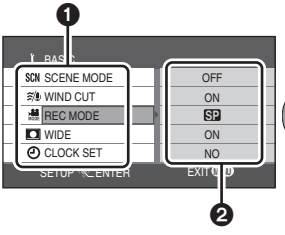
3





Press the cursor button right or press the button in the center.

4

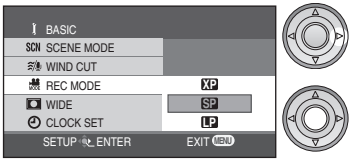




Press the cursor button up or down in order to select the submenu item.

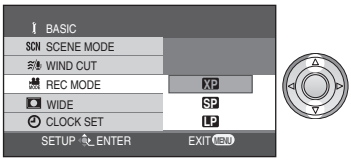
❶ Submenu
❷ Current settings on menus

5



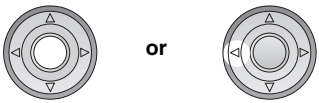
Press the cursor button right or press the button in the center.

6



Press the cursor button up or down in order to select the desired item.

7



Press the button in the center to enter the selection or press the cursor button left to get back to the previous screen.

To exit the menu screen



Press the [MENU] button.

To get back to the previous screen



Press the cursor button left.

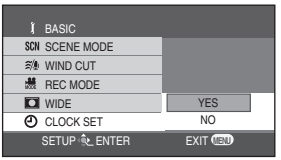
- If you change the settings for [WIDE] (P43), [PICTURE SIZE] (P55) or [TV ASPECT] (P74), the screen size changes. (If you change [PICTURE SIZE] to or from [HDTV], the size changes.)

Setting date and time

If the screen shows the incorrect date/time, then adjust it.

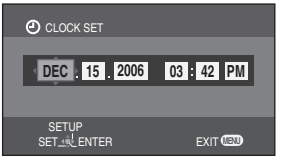
◇ **Rotate the mode dial to select or .**

1



Press the menu button, then use the cursor button to select [BASIC]→[CLOCK SET]→[YES]. (P27)

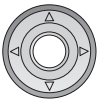
2



Press the cursor button left or right to select the item (year/month/day/ hours/minutes) to be set. Then, press the cursor button up or down to set the desired value.

- The year will change as follows: 2000, 2001, ..., 2099, 2000, ...
- When [Y/M/D] or [D/M/Y] has been set for [DATE FORMAT], the 24-hour system is used to display the time. When [M/D/Y] has been set, the 12-hour system is used.

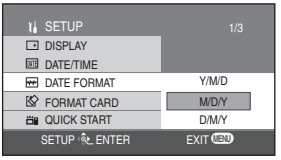
3



Press the button in the center to enter the selection.

- After pressing the menu button to finish the setting, check the date and time display.
- The clock function starts at [00] seconds.

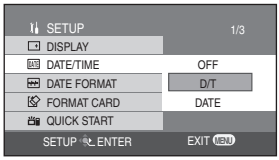
Changing the display style



Press the menu button, select [SETUP]→[DATE FORMAT], then use the cursor button to select the desired display style. (P27)

Display style	Screen display
Y/M/D	15:42 2006.12.15
M/D/Y	3:42 PM DEC 15 2006
D/M/Y	15:42 15.12.2006

Changing the date and time display style



Press the menu button, select [SETUP]→[DATE/TIME], then use the cursor button to select the desired display style. (P27)

- The date and time display can also be changed by pressing the [DATE/TIME] button on the remote control.

[DATE]

DEC 15 2006

[D/T]

3:42 PM
DEC 15 2006

[OFF]

■ About date/time

- The date and time function are driven by a built-in lithium battery.
- Make sure to check the time before recording because the built-in clock is not very accurate.
- If [0] or [−−] is indicated when this unit is turned on, then the built-in lithium battery runs down. After charging the battery using the steps below, set the clock.

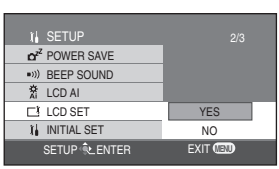
■ Charging the built-in battery for the date

- Connect the AC adaptor to this unit or place the battery on this unit, and the built-in lithium battery will be recharged. Leave this unit as is for approx. 24 hours, and the battery will save the date and time for approx. 6 months. (Even if the [ON/OFF] switch is set to [OFF], the battery is still being recharged.)

Adjusting LCD monitor

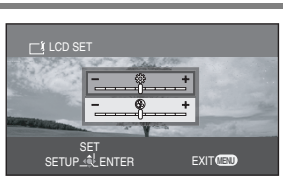
Adjusting the brightness and color level of the LCD monitor

1



Press the menu button, then use the cursor button to set [SETUP]→[LCD SET]→[YES]. (P27)

2



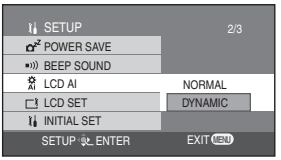
Press the cursor button up or down to select the item to be adjusted. Then, press the cursor button left or right to make the adjustment.

The bar display moves.

- : Brightness of the LCD monitor
- : Color level of the LCD monitor

- These settings will not affect the images actually recorded.

Changing the picture quality on the LCD monitor (LCD AI)

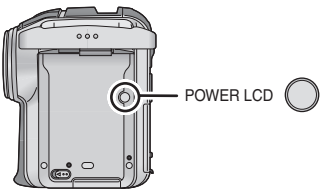


Press the menu button, then use the cursor button to select [SETUP]→[LCD AI]→[DYNAMIC] or [NORMAL]. (P27)

– **[DYNAMIC]:**
The image on the LCD monitor becomes clear and vivid.
– **[NORMAL]:**
Switches to the standard picture quality.

- When [DYNAMIC] is set, the LCD monitor is set to the color level and brightness optimally suited for the particular scenes to be recorded. Crisp and bright images will be displayed.
- The effect will vary depending on the scene recorded.
- This function is automatically set to [DYNAMIC] when the brightness of the LCD monitor is increased (when [] is displayed) and cannot be set to [NORMAL] independently.
- This will not affect the images to be recorded.

In order to increase the brightness of the entire LCD monitor



Press the [POWER LCD] button.

[] appears on the LCD monitor.

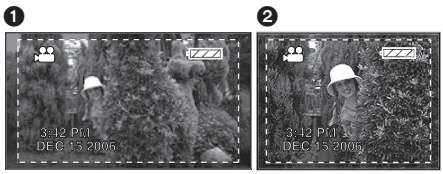
- If the [POWER LCD] button is pressed, the entire LCD monitor will become approx. twice as bright as the normal.
- LCD stands for Liquid Crystal Display, and in this context refers to the LCD monitor.

- When the button is pressed again, [] goes off, and the original brightness is restored to the LCD monitor.
- This will not affect the images to be recorded.
- When the AC adaptor is used, [] appears automatically and the monitor becomes brighter when the power is turned on.

Check before recording

First, format the SD card if one which has been used on another device is going to be used for the first time on this unit. (P68) When the SD card is formatted, all of the recorded data (files) is deleted. Once the data is deleted, it cannot be restored. Copy valuable data onto a PC or other device before proceeding with the formatting.
We recommend using MotionSD STUDIO etc. to acquire data recorded on this unit. (P76)

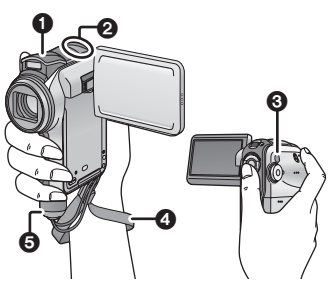
Depending on the TV connected, the sides of the images (the part outside the dotted line) being played may not appear. We recommend widening the recording range of the objects you want to record beforehand.
❶ 16:9 screen
❷ 4:3 screen



16:9 4:3

This unit is compatible with wide-screen TVs (16:9) and set to wide mode at the time of purchase. To watch images on normal TVs (4:3), change the wide mode setting before recording (P43) or when playing back the images on the TV screen (P74).

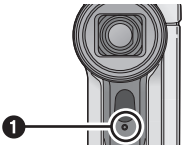
■ Basic camera holding



- Open the LCD monitor.
 Recording cannot start when the LCD monitor is closed. However, even if the LCD monitor is closed during recording, the power does not turn off until recording is ended.
- The angle of the LCD monitor can be adjusted to suit what you want to record.
- We recommend attaching the hand strap ❹ (supplied) to prevent the camera from dropping.
- It is easier to hold this unit if you attach the attachable grip ❺ (supplied) to the tripod mount. (P11)
- Do not cover the white balance sensor ❸ with your fingers, etc.
- Do not cover the lens, the front of the flash ❶ or the built-in stereo microphone ❷ with your fingers.

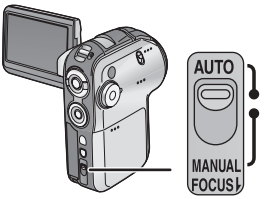
■ About the indication lamp ❶

The indication lamp flashes when signals from the remote control are sensed and during self-timer operation.
When [REC LAMP] in [ADVANCE] is set to [ON], the lamp lights during recording. You can therefore confirm recording when this unit is attached to a tripod or when using the remote control.



■ About the auto mode

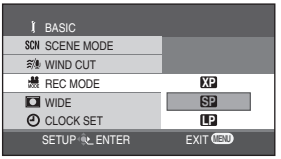
- Set the [AUTO/MANUAL/FOCUS] switch to [AUTO], and color balance (white balance) and focusing will be adjusted automatically.
 (The [AUTO] indication appears on the screen.)
 – Automatic white balance: P107
 – Auto focus: P108



- Depending on the brightness of the subject etc., the aperture and shutter speed are automatically adjusted for an optimum brightness.
 (When set to the motion picture recording mode: The shutter speed is adjusted to a maximum of 1/250.)
- Color balance and focus may not be adjusted depending on light sources or scenes. If so, manually adjust the white balance and focus.
 – Scene mode setting: P46
 – White balance setting: P49
 – Shutter speed setting: P51
 – Iris/gain value setting: P51
 – Focus setting: P48

Changing the recording mode of the motion picture

1



Press the menu button, then use the cursor button to select the desired recording mode by selecting [BASIC]→[REC MODE]. (P27)

- – XP : Motion pictures can be recorded with the highest picture quality.
- – SP : Motion pictures can be recorded with normal picture quality.
- – LP : Motion pictures can be recorded for longer.

■ About the kinds of SD cards that can be used

We recommend using SD Memory cards and SDHC Memory cards conforming to Class 2 or higher of the SD Speed Class Rating or the following SD Memory cards made by Panasonic for motion picture recording.

SD card memory	Pro High Speed SD Memory Card	Super High Speed SD Memory Card	High Speed SD Memory Card	High Speed SDHC Memory Card
256 MB	—	RP-SDH256	—	—
512 MB	RP-SDK512	RP-SDH512∗	RP-SDQ512 RP-SDR512	—
1 GB	RP-SDK01G	RP-SDH01G∗	RP-SDQ01G RP-SDR01G	—
2 GB	RP-SDK02G	—	RP-SDQ02G RP-SDR02G	—
4 GB	—	—	—	RP-SDR04G

∗ No longer made.

- Operation in motion picture recording is not guaranteed with an SD card memory from 32 MB to 4 GB except the cards above. (The recording may suddenly stop during motion picture recording.)

Please confirm the latest information about SD cards that can be used for motion picture recording on the following website.

http://panasonic.co.jp/pavc/global/cs/e_cam

(This website is in English only.)

Approximate recording times of motion pictures per SD card made by Panasonic

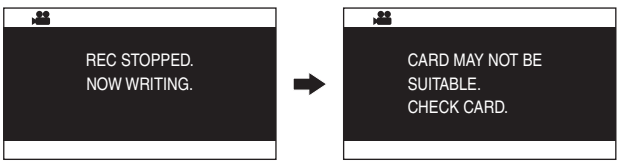
SD card memory	XP	SP	LP
256 MB	Approx. 3 min	Approx. 6 min	Approx. 12 min
512 MB	Approx. 6 min	Approx. 12 min	Approx. 25 min
1 GB	Approx. 12 min	Approx. 25 min	Approx. 50 min
2 GB	Approx. 25 min	Approx. 50 min	Approx. 1 h 40 min
4 GB	Approx. 50 min	Approx. 1 h 40 min	Approx. 3 h 20 min

- “1 h 40 min” indicates 1 hour 40 minutes.

This unit records in VBR. VBR is an abbreviation for Variable Bit Rate. VBR recording automatically varies the bit rate (amount of data in a fixed time) depending on the subject being recorded. This means if a subject with sharp movements is recorded, the recording time per SD card is reduced.

■ When recording stops suddenly during motion picture recording

When using an SD card on which data has been written many times and the data writing speed has reduced, the recording may suddenly stop during motion picture recording. At this time, the following message will appear:



When using an SD card (P35) that can be used for motion picture recording

When this kind of message appears, it is recommended that you format the SD card being used. (P68) When an SD card is formatted, all the data recorded on it will be deleted so copy valuable data to the PC prior to formatting. (P83) (We recommend using MotionSD STUDIO etc. to acquire data recorded on this unit. (P76))

When using any other card

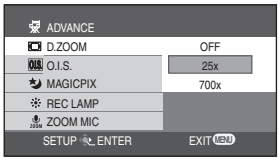
When motion pictures are to be recorded, use a Panasonic SD card or another SD card which can be used to record motion pictures. (P35)

- **Recordable time using the battery (P18)**
- 8 MB and 16 MB SD cards cannot be used for motion picture recording.
- If the write protection switch on the SD card is set to [LOCK], it cannot be used for recording. (P16)
- Even if there is available memory for recording on the SD card, it may not be possible to record. In this case, after saving the data on PC, format the SD card.
- The sound is recorded in stereo.
- The recorded scenes are recorded on the SD card as one motion picture scene.
- When recording is resumed after it was stopped, the scenes will be saved in a different scene.
- When recording motion pictures, do not remove the battery or disconnect the AC adaptor. Also do not remove the SD card while the [ACCESS] lamp is lit. If you do either of the above, a restore motion picture scene message is displayed when the SD card is next inserted or the power is turned back on. Be sure to restore the motion picture scene. (P100)
- Mosaic-pattern noise may appear on a playback image in the following cases.
 – When there is a complicated pattern in the background
 – When the unit is moved too much or too fast
 – When a subject with sharp movements has been recorded (Particularly if [MODE REC MODE] was set to [LP] during recording.)

This brings distant subjects even closer for recording (digital zoom)

If the zoom magnification exceeds 10×, then the digital zoom function will be activated. The maximum magnification provided by the digital zoom can be switched.

◇ **Rotate the mode dial to select .**



Press the menu button, use the cursor button to select [ADVANCE]→ [D.ZOOM], then set the desired magnification. (P27)

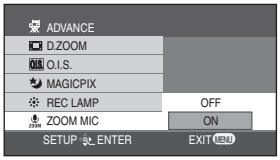
– OFF: Optical zoom only (Up to 10×)
– [25×]: Up to 25×
– [700×]: Up to 700×

- The larger the digital zoom magnification, the more the image quality is degraded.
- This function cannot be used in still picture recording mode.

■ To use the zoom microphone function

Interlocked with the zooming operation, the microphone will collect sounds clearly far away with the tele-shot or those in the vicinity with the wide-angle shot.

◇ **Rotate the mode dial to select .**



Press the menu button, then use the cursor button to select [ADVANCE]→ [ZOOM MIC]→[ON]. (P27)

Tele-macro function

This is for bringing only what you want to record into focus to take close-ups.

By focusing only on the subject and blurring the background, the image can be impressive. This unit can focus on the subject at a distance of approx. 50 cm (20 inch).

◇ **Rotate the mode dial to select or .**

1



Press the button in the center of the cursor button to display the icon shown in the illustration.

2



Press the cursor button up, then select the [] tele-macro icon.

- The [] icon flashes orange, then lights white.
- If the magnification is 10× or less, then it is automatically set to 10×.

To cancel the tele-macro function

Select the [] icon again.

- If a sharper focus cannot be achieved, adjust the focus manually. (P48)
- In the following cases, the tele-macro function is canceled automatically.
 - The zoom magnification becomes lower than 10×.
 - The power is turned off or the mode dial is set to a mode other than motion picture recording mode or still picture recording mode.

Soft skin mode

This makes skin colors appear softer for a more attractive appearance.

This is more effective if you record the bust image of a person.

◇ **Rotate the mode dial to select or .**

1



Press the button in the center of the cursor button to display the icon shown in the illustration.

2

Press the cursor button down, then select the [] soft skin icon.

- The [] icon flashes orange, then lights white.

To cancel the soft skin mode

Select the [] icon again.

Backlight compensation function

This is for protecting a backlit subject from being darkened.

Use this function when the light is emanating from behind the subject and the subject appears dark.

◇ **Rotate the mode dial to select or .**

1



Press the button in the center of the cursor button to display the icon shown in the illustration.

2



Press the cursor button right, then select the [ª] backlight compensation icon.

- The [ª] icon flashes orange, then lights white.
- The image on the screen will become brighter.

To return to normal recording

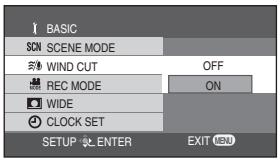
Select the [ª] icon again.

- In the following case, the backlight compensation is canceled automatically.
 – The power is turned off or the mode dial is set to a mode other than motion picture recording mode or still picture recording mode.

Wind noise reduction function

This is for reducing the wind noise coming into the microphone when recording.

◇ **Rotate the mode dial to select .**



Press the menu button, then use the cursor button to select [BASIC]→ [WIND CUT]→[ON]. (P27)

To cancel the wind noise reduction function

Press the menu button, then use the cursor button to select [BASIC]→ [WIND CUT]→[OFF]. (P27)

- This function's default setting is [ON].
- Reduces the wind noise depending on the wind strength. (If this function is activated in strong winds, the stereo effect may be reduced. When the wind weakens, the stereo effect will be restored.)

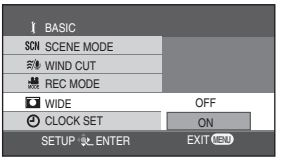
Wide mode

This is for selecting the screen's aspect ratio when recording motion pictures.

This allows you to record images compatible with wide-screen TVs (16:9) and regular TVs (4:3).

■ Recording images with a 16:9 aspect ratio

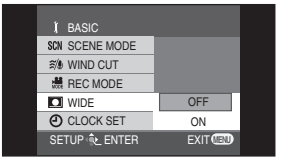
◇ Rotate the mode dial to select .



Press the menu button, then use the cursor button to select [BASIC]→[WIDE]→[ON]. (P27)

■ Recording images with a 4:3 aspect ratio

◇ Rotate the mode dial to select .



Press the menu button, then use the cursor button to select [BASIC]→[WIDE]→[OFF]. (P27)

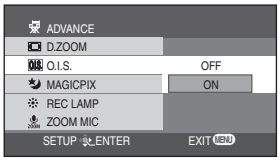
- This function's default setting is [ON].

Image stabilizer function

This is for reducing image shakes during recording.

Reduces the image shaking due to hand movement when recording.

◇ **Rotate the mode dial to select or .**



Press the menu button, then use the cursor button to select [ADVANCE]→[O.I.S.]→[ON]. (P27)

To cancel the image stabilizer function

Press the menu button, then use the cursor button to select [ADVANCE]→ [O.I.S.]→ [OFF]. (P27)

- In still picture recording mode, pressing the record button halfway increases the effect of the image stabilizer function. (MEGA OIS)
- When a tripod is used, we recommend that you turn the image stabilizer off.
- It may not be possible to compensate for image shake when the unit is shaken greatly or the person recording is chasing a fast-moving subject to record it.
- In the following case, the image stabilizer function may not work effectively.
 – When the digital zoom is used

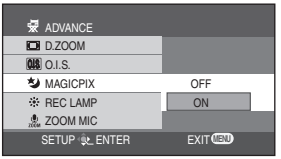
MagicPix function

This allows recording in dark locations.

This function allows you to record color subjects in dark locations to stand out against the background.
Attach this unit to a tripod, and you can record images free from vibration.

- Recorded scene is seen as if frames were missed.

◇ **Rotate the mode dial to select .**





Press the menu button, then use the cursor button to select [ADVANCE]→[MAGICPIX]→[ON]. (P27)

After exiting the menu screen, the unit is in manual focus mode. Press the cursor button left or right to bring the subject into focus manually. (P48)
In the following cases, press the button in the center of the cursor button twice to display the manual focus indication and then focus the subject.

- If MagicPix is set to [ON] when it has already been set to [ON].
- If the mode is changed when MagicPix is set to [ON].

To cancel the MagicPix function

Press the menu button, then use the cursor button to select [ADVANCE]→[MAGICPIX]→[OFF]. (P27)

- If set in a bright place, the screen may become whitish for a while.
- The MagicPix function makes the signal charging time of CCD up to approximately 30× longer than usual, so that dark scenes invisible to the naked eye can be recorded brightly. For this reason, bright dots that are usually invisible may be seen, but this is not a malfunction.
- If you turn off the power, the MagicPix function is canceled.

Sports mode

- For slow-motion playback or playback pause of recorded scenes, this mode prevents camera shakes.
- During normal playback, the scene movement may not look smooth.
- Avoid recording under fluorescent light, mercury light or sodium light because the color and brightness of the playback scene may change.
- If you record a subject illuminated with strong light or a highly reflective subject, vertical lines of light may appear.
- If the brightness is insufficient, the sports mode does not function. The [5] indication flashes.
- If this mode is used indoors, the screen may flicker.

Portrait mode

- If this mode is used indoors, the screen may flicker. If this happens, change the scene mode setting to [OFF].

Low light mode

- Extremely dark scenes may not be able to be recorded finely.

Spotlight mode

- If the recording subject is extremely bright, the recorded scene may become whitish and the periphery of the recorded scene extremely dark.

Surf & snow mode

- If the recording subject is extremely bright, the recorded scene may become whitish.

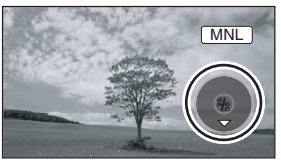
White balance

This is for recording in natural colors.

The automatic white balance function may not reproduce natural colors depending on the scenes or lighting conditions. If so, you can adjust the white balance manually.

◇ **Rotate the mode dial to select or .**

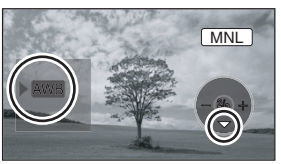
1



Set the [AUTO/MANUAL/FOCUS] switch to [MANUAL].

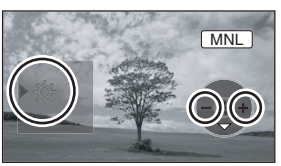
The icon shown in the illustration is displayed automatically.

2



Press the cursor button down to select the white balance indication (such as AWB).

3



Press the cursor button left or right to select the white balance mode.

Indication	Mode	Recording conditions
AWB	**Auto white balance adjustment**	
	Indoor mode (for recording under incandescent lamps)	Incandescent lights, halogen lamps
	Outdoor mode	Outdoors under a clear sky
	Manual adjustment mode	Mercury-vapor lamps, sodium lamps, some fluorescent lights Lights used for wedding receptions at hotels, stage spotlights in theatres, sunrise, sunset, etc.

To restore to the automatic adjustment

Set the white balance mode to [AWB].

- You can also restore the automatic adjustment by [AUTO/MANUAL/FOCUS] switch to [AUTO].

■ When recording fast-moving objects, then playing them back as still pictures for viewing

General guidelines for the shutter speed

- For recording golf swings or tennis shots: 1/500 to 1/2000
- For recording jet coaster rides: 1/500 to 1/1000

<Manual shutter speed adjustment>

- Avoid recording under fluorescent light, mercury light or sodium light because the color and brightness of the playback image may change.
- If you increase the shutter speed manually, the sensitivity lowers and accordingly the gain value increases automatically, which may increase the noises on the screen.
- You may see vertical lines of light in the playback image of a brightly shining subject or highly reflective subject, but this is not a malfunction.
- During normal playback, image movement may not look smooth.
- When recording in an extremely bright place, the screen may change color or flicker. If so adjust the shutter speed manually to 1/60 or 1/100.

<Manual iris/gain adjustment>

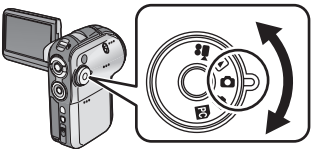
- If the gain value is increased, the noise on the screen increases.
- Depending on the zoom magnification, there are iris values that are not displayed.

- When setting both the shutter speed and the iris/gain value, set the shutter speed and then set the iris/gain value.

Still picture recording (JPEG still pictures)

For the number of still pictures to be recorded on an SD card, refer to P92.

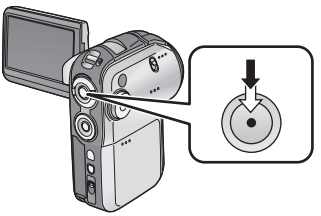
1



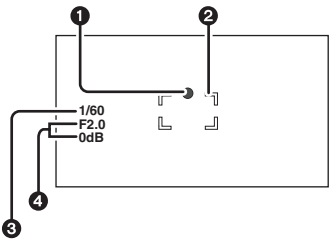
Rotate the mode dial to select .

The lens cover opens automatically.

2



Press the record button halfway (not all the way down) to bring the subject into focus. (In auto focusing mode only)

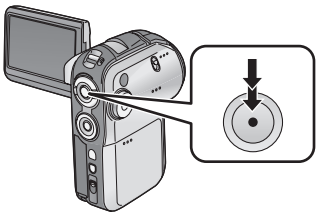


❶ Shutter chance mark
❷ Focus area
❸ Shutter speed
❹ Iris/gain

The shutter speed and the iris/gain value are fixed and the unit focuses on the subject automatically.

- When the record button is pressed halfway, the shutter chance mark is indicated as follows.
 - ○ (The white lamp flashes.): Focusing
 - ● (The green lamp lights up.): When in focus (Beeps twice)
 - No mark: When focusing is unsuccessful (4 beeps)
- If you set [O.I.S.] to [ON] (P44), then the image stabilizer function will be more effective. ([MEGA] will be indicated.)
- The shutter chance mark is indicated as follows when the record button is not pressed halfway. Please use it as a guide for recording.
 - ● (The green lamp lights up.): When in focus and a good picture can be recorded
 - ○ (The white lamp lights up.): Almost in focus

3



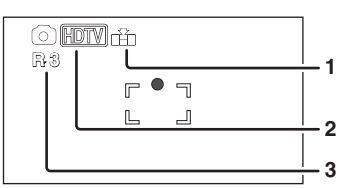
Press the record button all the way down (as far as it will go) to record.

To record still pictures clearly

- When zooming in on the subject with a magnification of 4× or higher, it is difficult to reduce the slight shaking from holding this unit by hand. We recommend decreasing the zoom magnification and approaching the subject when recording.
- You can record stable pictures without shaking by using a tripod and the remote control.

- The sound cannot be recorded.
- When the access lamp is lit, do not operate the mode dial.
- When the access lamp is lit, do not insert or remove an SD card.
- If the write protection switch on the SD card is set to [LOCK], it cannot be used for recording. (P16)
- Another product may degrade or not play back still pictures recorded on this unit.
- If set [PICT.QUALITY] to [], mosaic-pattern noise may appear on a playback image depending on the picture content.
- When the [PICTURE SIZE] is set to other than [640], the mega pixel recording mode is set.

■ Screen indications in still picture recording mode



1 Quality of still pictures

2 Size of still pictures

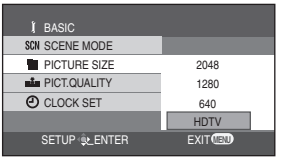
3 Remaining number of still pictures
(Flashes red when [R 0] appears.)

■ Number of pixels and picture quality for still picture recording

PICTURE SIZE

Changing the recording size

1



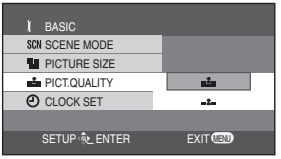
Press the menu button, use the cursor button to select [BASIC]→[PICTURE SIZE], then set the desired size. (P27)

- **2048**: 2048×1512 pixels
- **1280**: 1280×960 pixels
- **640**: 640×480 pixels
- **HDTV**: 1920×1080 pixels (still pictures recorded at 16:9 aspect ratio)

PICT.QUALITY

Selecting the picture quality

1



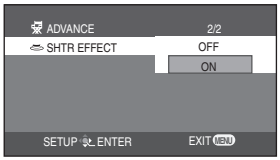
Press the menu button, use the cursor button to select [BASIC]→[PICT.QUALITY], then set the desired picture quality. (P27)

- : Still pictures with a high picture quality are recorded.
- : Priority is given to the number of still pictures recorded. Still pictures are recorded in normal picture quality.

- When you purchase this unit, [PICTURE SIZE] is set to [HDTV]. The sides of pictures recorded when [HDTV] is set may be cut at printing. Check before printing.
 When using the printer with a trimming feature or other feature which cuts out both edges of the pictures, cancel the feature for printing. (Refer to the operating instructions of the printer for details.)

Recording with a shutter operation effect

You can add a shutter operation simulating sound.



Press the menu button, then use the cursor button to select [ADVANCE]→[SHTR EFFECT]→[ON]. (P27)

■ About the shutter chance mark

- The shutter chance mark does not appear in manual focus mode.
- When the subject is not easily focused, focus on the subject manually. (P48)
- You can record still pictures on the SD card even if the shutter chance mark does not appear, but pictures may be recorded without being focused.
- The shutter chance mark does not appear or is difficult to display in the following cases.
 - When the zoom magnification is high.
 - When this unit is shaken.
 - When the subject is moving.
 - When the subject stands against the light source.
 - When close subjects and far subjects are included in the same scene.
 - When the scene is dark.
 - When there is a bright part in the scene.
 - When the scene is filled with only horizontal lines.
 - When the scene lacks contrast.

■ About the focus area

When there is a contrasting object ahead or behind the subject in the focus area, the subject may not be focused. If so, move the contrasting object out of the focus area.

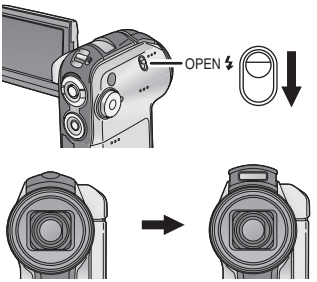
- If focusing is still difficult, use manual focus to adjust the focus. (P48)

Built-in flash

Use the built-in flash in order to record still pictures in dark places.

◇ **Rotate the mode dial to select .**

1

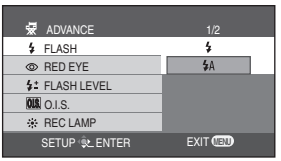


Slide the [OPENß] flash lever.

The flash rises.

- The flash will flash when the record button is pressed.

Setting the flash mode



Press the menu button, then use the cursor button to select [ADVANCE]→[ß FLASH] and then select the desired setting. (P27)

– [ß]: Forced flash
– [ßA]: Auto

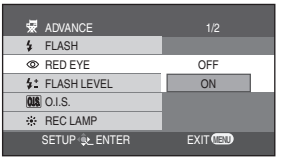
- When [ßA] is set, the ambient brightness is automatically detected, and only when the flash is judged necessary will it flash.

When the flash is not used

Store the flash by pressing it with your fingers until it clicks back into place.

Red eye reduction function

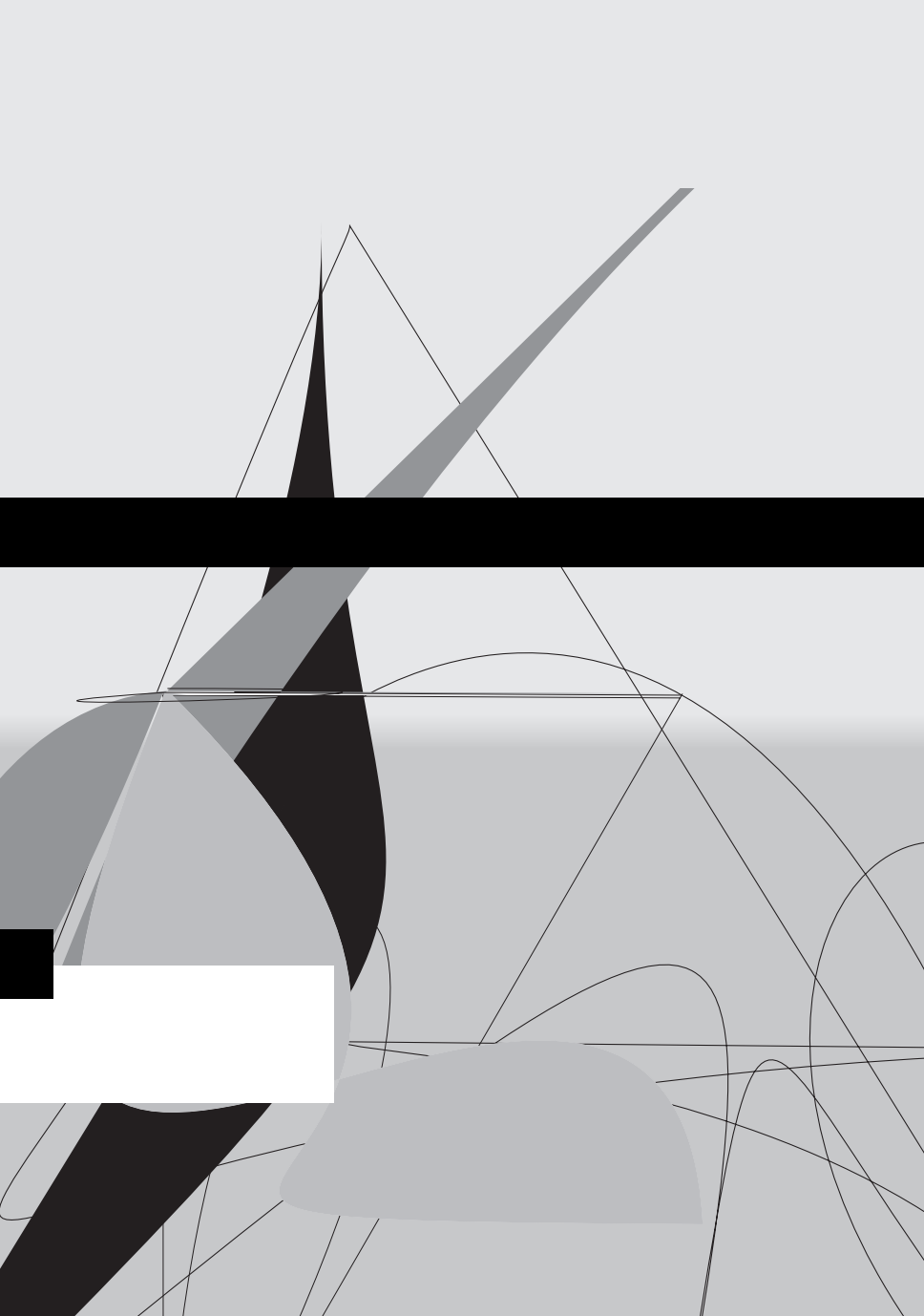
Reduces the phenomena where human eyes become red from flashes.



Press the menu button, then use the cursor button to select [ADVANCE]→[RED EYE]→[ON]. (P27)

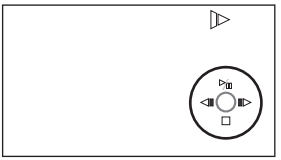
The [] indication appears.

- The flash is activated 2 times. Do not move until the second flash is finished.
- Use this when you take pictures of people in dark places.
- Red eye phenomenon may appear depending on the recording conditions.



Slow-motion playback

The motion pictures will be played back at a speed approx. 1/5 the normal speed.



1) Press the cursor button up during motion picture playback to pause the playback.

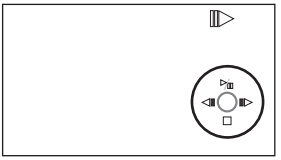
2) Keep pressing the cursor button right. (Slow-motion pictures will be played back in reverse when you keep pressing the cursor button left.)

- Normal playback is restored when the cursor button up is pressed.

- The sound is muted during slow-motion playback.

Frame-by-frame playback

The motion picture is advanced one frame at a time.



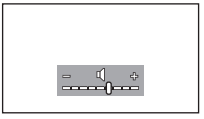
1) Press the cursor button up during motion picture playback to pause the playback.

2) Press the cursor button right. (The frames will be advanced one at a time in the reverse direction when you press the cursor button left.)

- Normal playback is restored when the cursor button up is pressed.

To adjust volume

Adjusting the speaker volume, or the headphone volume when using headphones (optional), during playback.



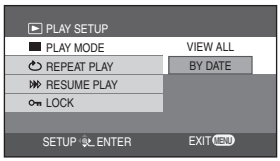


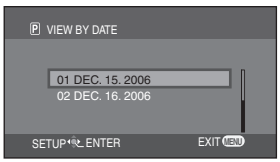
Move the volume lever to change the volume level.

– **Towards [+]:** increases the volume
– **Towards [−]:** decreases the volume

- The further the [▯] indication moves to the right (towards the "+" end), the higher the volume level becomes.
- When the adjustment is completed, the volume indication will disappear.

Playing back motion pictures by date





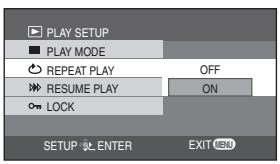
1) Press the menu button, then use the cursor button to select [PLAY SETUP]→[PLAY MODE]→[BY DATE]. (P27)

- When [PLAY MODE] is set to [VIEW ALL], all recorded motion pictures will be played back in succession. ([P ALL] is displayed.)

2) Press the cursor button up or down to select the date for playback, then press the button in the center.

- Once the playback of one motion picture is started, any other motion pictures recorded on the same day will then be played back in succession. ([P 01] etc. is displayed.)

Repeat playback

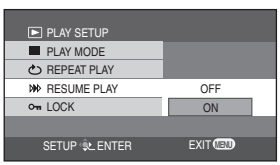


Press the menu button, then use the cursor button to select [PLAY SETUP]→[REPEAT PLAY]→[ON]. (P27)

The [] indication appears on the thumbnail and full screen views.

- In order to cancel the repeat playback mode, set [REPEAT PLAY] to [OFF].

Resuming the previous playback



Press the menu button, then use the cursor button to select [PLAY SETUP]→[RESUME PLAY]→[ON]. (P27)

- If playback of a motion picture is stopped, [R] appears on the thumbnail view of the stopped scene.

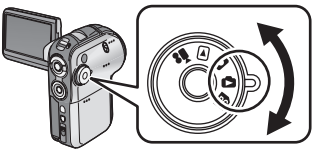
- If playback is stopped at any point during a motion picture while [RESUME PLAY] is set to [OFF], the next time the motion picture is played back, it will be from the beginning.
- [RESUME PLAY] is set to [OFF] if an SD card with the write protection switch at the [LOCK] position is inserted. (P16)

■ About motion picture mode compatibility

- This unit can play back MPEG2 formatted files.
- This unit is based on the SD-Video standard.
- This unit may degrade or not play back motion pictures recorded or created on another product and another product may degrade or not play back motion pictures recorded on this unit.
- Motion pictures less than approximately 2 seconds cannot be played back.
- The thumbnails of motion pictures that cannot be played back are displayed in shades of blue and white. (P105)

Still picture playback (JPEG still pictures)

1



Rotate the mode dial to select .

The lens cover closes automatically.
The still pictures (up to 12 scenes) recorded on the SD card are displayed as thumbnails.

2

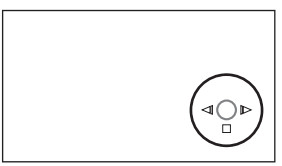


Press the cursor button up, down, left or right to select the scene to be played back.

❶ Scene number
❷ Bar graph
The selected scene will be encircled by a red frame.

- When 13 or more scenes have been recorded, the next (or previous) page is displayed by pressing the cursor button.
- If you press and hold the cursor button up or down, you can advance 12 scenes at a time. The screen will not change at this time, but the scene numbers and bar graph display will change so release the button when you have arrived at the page with the scene you want to display.

3

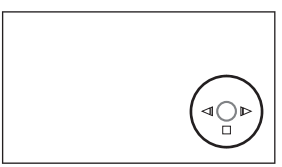


Press the button in the center of the cursor button.

The selected scene is played back on the full screen.

The operation icon is automatically displayed on the LCD monitor.

4

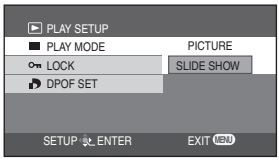


Press the cursor button up, down, left or right to operate.

▶/❚❚ : Slide show (playback of the still pictures on the SD card in numerical order) start/pause. ✳
◀❙ : Plays back the previous picture.
❙▶ : Plays back the next picture.
■ : Stops the playback, and shows the thumbnails.

✳ Only when [SLIDE SHOW] has been selected. (P64)

Playing back still pictures as a slide show



Press the menu button, then use the cursor button to select [PLAY SETUP]→[PLAY MODE]→[SLIDE SHOW]. (P27)

- Still pictures will not be played as a slide show when [PICTURE] is selected.

■ About still picture compatibility

- This unit is compliant with the unified standard DCF (Design rule for Camera File system) established by JEITA (Japan Electronics and Information Technology Industries Association).
- The file format supported by this unit is JPEG. (Not all JPEG formatted files will be played back.)
- If an out-of-specs still picture is played back, the folder/file name may not be displayed.
- This unit may degrade or not play back still picture recorded or created on another product and another product may degrade or not play back data recorded on this unit.

- Do not operate the mode dial during the slide show.
- When the access lamp is lit, do not insert or remove an SD card.
- It takes time to display the still picture depending on the number of pixels of the still picture.
- If you attempt to play back still pictures recorded in a different format or still picture data is defective, the whole display becomes grayish and the “UNPLAYABLE CARD.” indication may appear as warning.
- When playing back a still picture recorded on other equipment, the date and time display is different from when it was recorded.
- When playing back a still picture recorded on other equipment, its size and that of this unit may appear differently. (P97)
- Even if the LCD Monitor is closed, the power does not turn off.

Deleting scenes

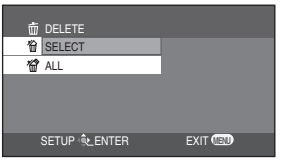
This is for deleting scenes recorded on SD cards.

The deleted scenes cannot be restored.

■ Deleting multiple files from the thumbnail display.

◇ Rotate the mode dial to select ▶ or 📷.

1

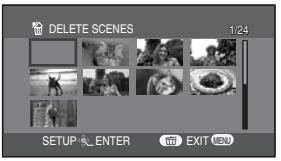


Press the menu button, then use the cursor button to select [🗑 DELETE]→[🗑 SELECT] or [🗑 ALL]. (P27)

When [SELECT] is selected, the motion picture or still picture scenes will be displayed as thumbnails.

- When [ALL] is selected, proceed to step 4.

2



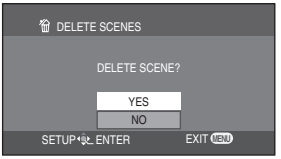
(Only when [SELECT] is selected in step 1)

Use the cursor button to select the scene to be deleted, then press the button in the center.

The selected scene will be encircled by a yellow frame.

- When the button in the center is pressed again, the selected scene will be canceled.
- Up to 12 scenes displayed on a page can be set in succession.

3



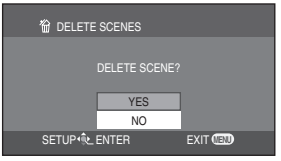
(Only when [SELECT] is selected in step 1)

Press the [🗑] button.



- If no file is selected in step 2 and the [🗑] button is pressed, the scene encircled by a red frame is deleted.

4



When the confirmation message appears, use the cursor button to select [YES], then press the button in the center.

- To stop deleting, select [NO].

■ Deleting scenes one at a time

◇ Rotate the mode dial to select ▶ or 📷.

1



Press the [🗑] button during playback.

2



When the confirmation message appears, use the cursor button to select [YES], then press the button in the center.

- To stop deleting, select [NO].

■ Deleting still picture files recorded on an SD card by other equipment

A still picture file (other than JPEG) that cannot be played back on this unit may be erased.

- Do not open the card slot cover while deleting. The deletion will stop.
- Scenes displayed as thumbnails in shades of blue and white cannot be deleted. (P105)
- Scenes that are locked cannot be deleted.
- If the write protection switch on an SD card is set to [LOCK], the scenes on the card cannot be deleted. (P16)
- When “CARD FULL.” is shown during recording, delete unnecessary scenes. If there are no scenes to be deleted, it means that the memory is full so insert a new SD card.
- In case of [ALL], the deletion may take time if there are many scenes on the SD card.
- When [ALL] is selected in the motion picture playback mode, the following scenes will be deleted.
 – When [PLAY MODE] is set to [VIEW ALL]:
 All the scenes on the SD card
 – When [PLAY MODE] is set to [BY DATE]:
 All the scenes selected by date
- Do not turn off this unit while deleting.
- When you delete scenes, use a battery with sufficient battery power or use the AC adaptor.
- If scenes conforming to DCF standard are deleted, all the data related to the scenes will be deleted.

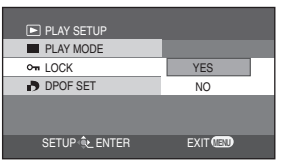
Locking scenes

This is for preventing scenes from being deleted by mistake.

Scenes recorded on an SD card can be locked so that they may not be deleted by mistake. (However even if you lock some scenes on an SD card, formatting the card will delete all the scenes.)

◇ **Rotate the mode dial to select [▶] or [📷].**

1



Press the menu button, then use the cursor button to select [▶ PLAY SETUP]→[🔑 LOCK]→[YES]. (P27)

2



Press the cursor button up, down, left or right to select the scene to be protected, then press the button in the center.

[🔑] indication appears and the selected scene is locked.

- Press the button in the center again to release the lock setting.
- 2 or more scenes can be set in succession.

To complete the settings

Press the [MENU] button.

- Scenes displayed as thumbnails in shades of blue and white cannot be locked. (P105)
- If the write protection switch on an SD card is set to [LOCK], the scenes on the card cannot be locked. (P16)

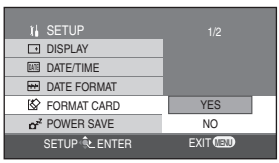
Formatting an SD card

This is for initializing (formatting) cards.

Please be aware that if an SD card is formatted, then all the data recorded on the card will be erased. Store important data on a PC, etc. We recommend using MotionSD STUDIO etc. to acquire data recorded on this unit. (P76)

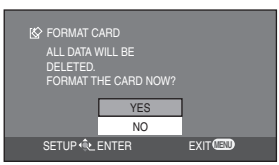
◇ **Rotate the mode dial to select , , or .**

1



Press the menu button, then use the cursor button to select [SETUP]→[FORMAT CARD]→[YES]. (P27)

2



When the confirmation message appears, use the cursor button to select [YES], then press the button in the center.

- To cancel formatting, select [NO].

- Use this unit to format SD cards. If an SD card is formatted on other equipment (such as a PC), the time spent for recording may become longer and you may not be able to use the SD card.
- During formatting, do not turn this unit off.
- When you format the SD card, use a battery with sufficient battery power or the AC adaptor.
- Depending on the type of SD card being used, it may take time to format.
- Do not remove the SD card while formatting.
- If the write protection switch on an SD card is set to [LOCK], it cannot be formatted. (P16)

setting

riting the printing data on an SD card.

ata of pictures to be printed, number of copies, and other
ata) onto the SD card.

dial to select .

Press the menu button, then use the cursor button to select [PLAY SETUP]→[DPOF SET]→ [SET]. (P27)

Press the cursor button up, down, left or right to select a scene to be set, en press the button in the center.

number of prints set to be in DPOF is
ed.

cursor button up or down to number of prints, then tton in the center.

rom 0 to 999. (Selected
s can be printed as you set
s with the printer

nceled by setting the

et in succession.

2



Press the cursor button up, down, left or right to select a scene to be printed, then press the button in the center.

The number of pictures set is displayed.

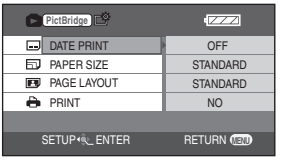
3



Press the cursor button up or down to select the desired number of prints, then press the button in the center.

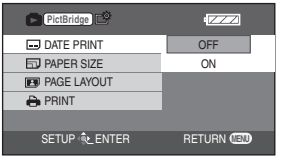
- You can set up to 9 prints.
- The function can be canceled by setting the number of pictures to [0].
- Up to 12 scenes displayed on a page can be set in succession by repeating steps 2 and 3.

4



Press the menu button to display the menus screen.

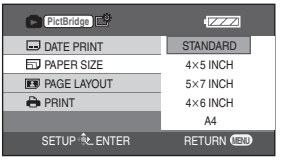
5



Use the cursor button to select [DATE PRINT], then press the cursor button right to enter the date print setting.

- If the printer is not capable of date printing, this setting is unavailable.

6

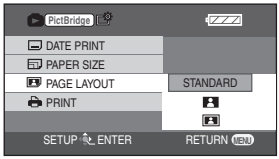


Use the cursor button to select [PAPER SIZE], then press the cursor button right to enter the paper size setting.

- **STANDARD:** Size specific to the printer
- **4×5 INCH:** L size
- **5×7 INCH:** 2L size
- **4×6 INCH:** Postcard size
- **A4:** A4 size

- You cannot set paper sizes not supported on the printer.

7

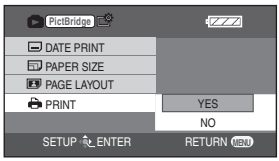


Use the cursor button to select [PAGE LAYOUT], then press the cursor button right to enter the layout setting.

– **STANDARD:** Layout specific to the printer
– : No frame print
– : Frame print

- You cannot set page layouts not supported on the printer.

8



Use the cursor button to select [PRINT], then press the cursor button right to select [YES]. The pictures are printed.

- Exit PictBridge by disconnecting the USB cable (supplied) after the pictures have been printed.

When you stop printing halfway

Press the cursor button down.

- A confirmation message appears. If [YES] is selected, the settings are canceled and the screen returns to the thumbnails. If [NO] is selected, the settings made in steps 5 to 7 are kept and the screen returns to the thumbnails.

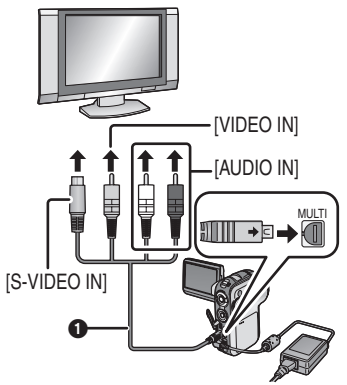
- Avoid the following operations during printing. These operations disable proper printing.
 – Disconnecting the USB cable
 – Removing the SD card
 – Switching the mode dial
 – Turning off the power
- Check the settings for the paper size, quality of print, etc. on the printer.
- Still pictures recorded on other equipment may not be printed.
- When the unit is connected directly to the printer, the DPOF settings cannot be used.
- Connect the printer directly to this unit. Do not use a USB hub.
- The sides of pictures recorded when [PICTURE SIZE] is set to [HDTV] may be cut at printing. When using a printer with a trimming or borderless function, cancel this setting. (Refer to the operating instructions of the printer for details.)

Playback on TV

Images recorded by this unit can be played back on a TV.

◇ **Insert an SD card with recordings into the unit.**

1

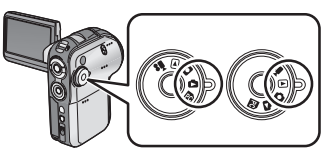


Open the terminal cover and then connect the multi cable (supplied) to the multi-connector terminal [MULTI] and the TV.

❶ Multi cable (supplied)
Insert the plugs as far as they will go.

- If the TV has an S-Video terminal, then also connect an S-Video plug. It allows you to enjoy more beautiful images.
 (You must also connect the Video/Audio input terminals.)
- Use the AC adaptor to free you from worrying about the battery running down.

2



Turn on this unit, then set the mode to [▶] or [📷].

3 Change the input channel on the TV.

<TV setting>
Example: Set the channel to “VCR2” etc. (The channel set will differ depending on the terminal to which the cable is connected.)

4 Start playback on this unit. (P60, 63)

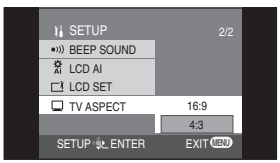
The image and audio are output on the TV.

■ If the image or audio from this unit is not output on the TV

- Check that the plugs are inserted as far as they go.
- Check the connected terminal.
- You may not be able to playback motion pictures recorded to SD card on this unit by inserting the SD card into a TV with a built-in SD card slot.
- **Check the TV’s input setting (input switch). (For more information, please read the operating instructions for the TV.)**

Connecting to a TV with a 4:3 TV aspect ratio

When motion pictures recorded with a 16:9 aspect ratio (the motion picture recording menu's [WIDE] setting is [ON]) or still pictures recorded with the same aspect ratio (the still picture recording menu's [PICTURE SIZE] setting is [HDTV]) are played back on a TV with a 4:3 aspect ratio, the images shown on the LCD monitor may be elongated vertically. In this case, you can play them back with their original aspect ratio by changing the menu setting. (Depending on the settings of the TV, the images may not be shown correctly. Refer to the operating instructions of the TV.)



Press the menu button, then use the cursor button to select [SETUP]→ [TV ASPECT]→[4:3]. (P27)

Examples showing images with a 16:9 aspect ratio displayed on the TV screen

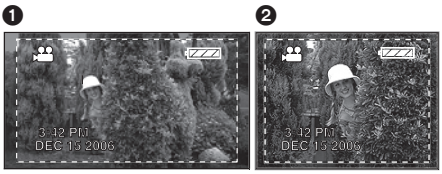
		Aspect ratio of TV screen		
		4:3	16:9	
[TV ASPECT]	16:9	①	③	① The images are elongated vertically. ② Black bands appear at the top and bottom of the screen. ③ The regular images are displayed. ④ Black bands appear at the top, bottom, left and right of the screen.
	4:3	②	④	

■ When watching the recorded motion pictures on TV

Depending on the TV connected, the sides of the images (the part outside the dotted line) being played may not appear. We recommend widening the recording range of the objects you want to record beforehand.

❶ 16:9 screen

❷ 4:3 screen



16:9 4:3

To display the on-screen information on the TV

The information displayed on the LCD monitor (operation icon and mode indication, etc.) can be displayed on the TV.



Press the [EXT DISPLAY] button on the remote control.

- Press the button again to erase the information.
- The LCD monitor display does not change.

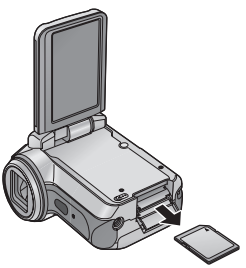
Using this unit's recorded data on other devices

This is for copying recordings from a DVD recorder's SD card slot onto its hard disk.

To prevent accidental deleting of images recorded, or when the SD card is full, record the files on the SD card to the DVD recorder's hard disk or DVD-RAM.
Depending on the type of DVD recorder or SD card used, it may not be possible to copy motion pictures (MPEG2) recorded with this unit onto a hard disk, etc. (P16)

- For further details, refer to the operating instructions of the DVD recorder.

1



Remove the SD card with the recorded images from this unit. (P15)

- Set this unit's power switch to [OFF] then remove the SD card from it.

2



Insert the SD card into the DVD recorder's SD card slot.

- For details on how to record the images onto the hard disk, refer to the operating instructions of the DVD recorder.

- If you cannot copy images recorded with this unit directly from an SD card, connect this unit and the DVD recorder with the multi cable (supplied). You can then copy the images output on this unit. (For details on how to connect and record, refer to the operating instructions of the device you are connecting to e.g. DVD recorder.)
- The images recorded on the hard disk or DVD-RAM are converted to the DVD video recording format. Once converted, you cannot copy them at high speed onto a DVD-R or copy them onto an SD card using the MPEG2 format.

If you copy images directly from an SD card or using the multi cable (supplied) and then play them back on a wide-screen TV, they may be stretched vertically.
In this case, refer to the operating instruction of the device you are connecting to or read the operating instructions of the wide-screen TV and set the aspect ratio to 16:9.

With a PC

When the CD-ROM (supplied) is inserted into the PC, the CD launcher starts.



Video editing software MotionSD STUDIO 1.1E

This software allows pictures to be acquired from this unit, edited and output.
You can also send a picture acquired from this unit by e-mail, and edited pictures can be written to the DVD drive.
For information about how to use MotionSD STUDIO 1.1E, read the PDF operating instructions.

Web Camera Driver USB Video Class Motion JPEG Driver+Audio Class Driver

When the unit is connected to a PC, you can send pictures and audio from the unit over the Internet to the person you are communicating with. Alternatively, you can use the PC's speakers to configure a kind of Internet TV phone for communicating.

Acrobat Reader

To view the installed operating instructions of MotionSD STUDIO, Adobe Acrobat Reader 5.0 or later is required.
If Adobe Acrobat Reader is not installed in the PC used, click the desired language in the setup screen (or open a folder of which name is the name of the desired language in [Adobe] folder and then double-click [AR505XXX.exe] or [AR500XXX.exe] file. "XXX" (the last 3 characters in the name of the file) varies depending on the language folder you selected) and follow the message on the screen to install Adobe Acrobat Reader.

DirectX

You will need Microsoft DirectX 9.0b in order to use MotionSD STUDIO or the Web camera functions. (It can also be installed when you install the MotionSD STUDIO or Web camera driver.) If DirectX is not installed on your PC because you canceled its installation when installing the software, click [DirectX] in the CD launcher, and follow the on-screen messages to install it.

- Depending on the operating environment, software applications supporting the old version of DirectX may not run properly after DirectX 9.0b has been installed. If this happens, contact the manufacturer of these applications.
 (Your PC must support DirectX 9.0)

- Even if the system requirements mentioned in these operating instructions are fulfilled, some personal computers cannot be used.
- This software is not compatible with Microsoft Windows 3.1, Windows 95, Windows 98, Windows Me and Windows NT.
- Operation is not guaranteed on an upgraded OS.
- Operation on an OS other than the one pre-installed is not guaranteed.
- When 2 or more USB devices are connected to a PC, or when devices are connected through USB hubs or by using extension cables, proper operation is not guaranteed.
- Use the supplied USB cable when connecting to the PC. (Operation is not guaranteed with any other USB cables.)

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- To upgrade the Windows Service Pack (SP2, SP4 etc.), select [start] (→[All Programs (Programs)])→[Windows Update]. (Internet connection is required for this.)

Refer to P88 if using a Macintosh.

Operating environment for MotionSD STUDIO (Video Editing Software)

Personal computer	IBM PC/AT com
OS	Micros
CPU	
Necessary software	
Sound	
Drive	C (Whe
Interface	USB por
Other requirements	Mouse or equ

MotionSD STUDIO

- This software is not compatible with a mu
- This software is not compatible with a multi-
- Operation is not guaranteed on Microsoft Windo PC Edition and not compatible with 64 bit operatio

Operating environment for using the unit as a Web camera

Personal computer	IBM PC/AT compatible personal computer
OS	Microsoft Windows 2000 Professional Service Pack 4 Microsoft Windows XP Home Edition Service Pack 1/2 Microsoft Windows XP Professional Service Pack 1/2 (The standard driver of OS is used after Windows XP Service Pack 2.)
CPU	Intel Pentium III 450 MHz or higher or Intel Celeron 400 MHz or higher
RAM	128 MB or more (256 MB or more recommended)
Display	High Color (16 bit) or more Desktop resolution of 800×600 pixels or more
Free hard disk space	250 MB or more
Necessary software	DirectX 9.0b or 9.0c Windows Messenger 5.0 or 5.1 MSN Messenger 7.0 or 7.5 (7.5: Windows XP only)
Sound	Windows compatible sound device
Drive	CD-ROM drive (for installation)
Interface	USB port
Other requirements	Mouse or equivalent pointing device

To use this unit as a Web Camera, the following conditions must be met.

- For information about how to use Windows Messenger/MSN Messenger, read the help file.
- The other parties also need to use the same software during the communication.
- Depending on the PC's security settings, proper communication may not be possible.

Operating environment for the card reader function (mass storage)

Personal computer	IBM PC/AT compatible personal computer
OS	Microsoft Windows 2000 Professional Service Pack 4 Microsoft Windows XP Home Edition Service Pack 1/2 Microsoft Windows XP Professional Service Pack 1/2 (The standard driver of OS is used.)
CPU	Intel Pentium III 450 MHz or higher or Intel Celeron 400 MHz or higher
RAM	128 MB or more (256 MB or more recommended)
Interface	USB port
Other requirements	Mouse or equivalent pointing device

Installing MotionSD STUDIO

- Before attempting to start up the CD launcher, close all other software applications which are running.
- Do not perform any other operations on your PC while MotionSD STUDIO is being installed.

1 **Insert the CD-ROM into the PC.**

The CD launcher starts.
(Refer to page 82 if the CD launcher fails to start automatically after the CD-ROM has been inserted into the PC.)

2 **Click [MotionSD STUDIO 1.1E].**

- The software application may not run properly if you cancel the installation at any point e.g. by pressing [Cancel].

3 **Click [Next].**

- Continue to follow the on-screen messages to install it.

4 **Select the video system.**

5 **Click [Finish].**

- Depending on the operating environment, you may be required to install DirectX 9.0b. If so, click [Yes], and install it.
- **If it is necessary to reboot the PC after the application has been installed, click [Yes] and reboot it.**

- If you install the software in a PC that is not compatible with DirectX 9.0b or 9.0c, the PC may stop operating properly.
- If you are unsure whether or not your PC is compatible, contact the maker of your PC.

Installing the Web Camera Driver

- Before attempting to start up the CD launcher, close all other software applications which are running.
- Install the driver if you are using Windows XP Service Pack 1 or Windows 2000 Service Pack 4. (With Windows XP Service Pack 2, the driver does not need to be installed because the Web camera is run using the operating system's standard driver.)
- If you are using Windows XP, installation may take some time depending on the environment.

Before proceeding with the installation, do not connect the USB cable. If you connect the USB cable, you will not be able to install the Web camera driver properly.

1



Insert the CD-ROM into the PC.

The CD launcher starts.
(Refer to page 82 if the CD launcher fails to start automatically after the CD-ROM has been inserted into the PC.)

2



Click [Web Camera Driver].

- The software application may not run properly if you cancel the installation at any point e.g. by pressing [Cancel].

3

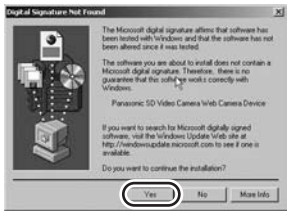


Click [Next].

4 **Read carefully through the terms and conditions shown on the screen for the [License Agreement], then click [Yes].**

- You cannot install the application if you click [No].

When this unit is in motion picture recording mode or still picture recording mode, verify the driver. (P90)

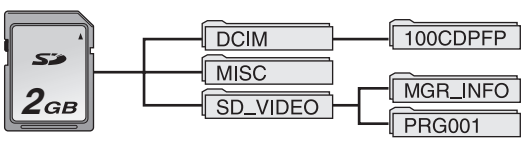


- If you are running Windows 2000, the message shown on the right may appear the first time you connect this unit to the PC (the first time you use motion picture recording mode or still picture recording mode). This has no affect on operation so click [Yes].
 - [Panasonic SD Video Camera Web Camera Device] is displayed.
 - The recognition procedure is completed automatically, and there may be no need to conduct any further steps. (You may proceed straight away to using this unit and PC.)

In PC Connection mode

[Removable disk] is displayed on [My Computer].

■ Folder structure of a removable disk



- The scenes recorded by this unit are stored in the following folders.

	Folder (example)	Scene (example)
Motion pictures	PRG001	MOV001.MOD
Still pictures	100CDPFP	IMGA0001.JPG

- Do not use the PC to delete the SD card's folders. Otherwise, it may no longer be possible for this unit to read the SD card.
- Always use this unit to format SD cards.
- When data not supported by this unit has been recorded on a PC, it will not be recognized by this unit.
- Up to 999 scenes can be recorded in the [100CDPFP] or other such folder.
- Up to 99 scenes can be recorded in the [PRG001] or other such folder.
- The DPOF setting scenes are recorded in the [MISC] folder.

If you wish to acquire the scenes recorded on this unit using Explorer etc., refer to the operating instructions for MotionSD STUDIO (PDF file).

Using MotionSD STUDIO

- Before initial use, select the software's [Read this first] from the start menu, then read through the additional instructions or updated information.
- The End User Licence Agreement is displayed when the software is first started so read carefully through its terms and conditions, then click [I agree].

■ Starting MotionSD STUDIO

1 **Select [start]→ [All Programs (Programs)]→ [Panasonic]→ [MotionSD STUDIO 1.1E]→ [MotionSD STUDIO].**

[Let's Try MotionSD STUDIO] is displayed on the screen.

■ Closing MotionSD STUDIO

1 **Click [] at the very bottom of [TOOL BOX].**

- MotionSD STUDIO can be closed by selecting [File]→[Exit] on the MotionSD STUDIO menu.

- If you use MotionSD STUDIO to edit images and then output them to an SD card, use an SD card made by Panasonic or one that allows motion picture recording. (P16)
- If you use MotionSD STUDIO to output a large number of scenes to an SD card, DVD R/RW or DVD-RAM, the scenes may be displayed as thumbnails or it may take time to output.

■ Software that can be used when using the unit as a Web Camera

(○: Available, —: Not available)

			❷		
			Windows XP		Windows 2000
			Windows Messenger	MSN Messenger	MSN Messenger
❶	Windows XP	Windows Messenger	○	—	—
		MSN Messenger	—	○	○
	Windows 2000	MSN Messenger	—	○	○

Refer to page 79 for information about the operating environment.

❶ Your own PC

❷ Other person's PC

■ Connections

Before connecting the unit to the PC, you must install [Web Camera Driver]. (P81)

1) Turn on the unit's power, then set it to motion picture recording mode or still picture recording mode.

2) Connect the unit to the PC via the USB cable. (P83)

- Do not use any other USB cables except the supplied one. (Operation is not guaranteed with any other USB cables.)

3) Select [start]→[All Programs (Programs)]→[Windows Messenger] or [MSN Messenger].

If using a Macintosh

- Even if the system requirements mentioned in these operating instructions are fulfilled, some personal computers cannot be used.
- Apple, Mac OS is either registered trademarks or trademarks of Apple Computer, Inc. in the United States and/or other countries.
- PowerPC is a trademark of International Business Machines Corporation.
- Intel® Core™ Solo and Intel® Core™ Duo are either registered trademarks or trademarks of Intel Corporation in the United States and/or other countries.

Operating environment for the card reader function (mass storage)

Personal computer	Macintosh
OS	Mac OS X 10.3 to 10.4
CPU	PowerPC G3 (400 MHz or higher) PowerPC G4 PowerPC G5 Intel Core Duo Intel Core Solo
RAM	64 MB or more
Interface	USB port

- Use an OS standard driver for operation.
- Supplied CD-ROM is available for Windows only.

■ Copying still pictures on PC

1) Connect this unit to the personal computer via the supplied USB connection cable.

2) Double-click [NO_NAME] or [Untitled] displayed on the desktop.

- Files are stored in [100CDPFP] folder in the [DCIM] folder.

3) Using a drag-and-drop operation, move the pictures you want to acquire or the folder storing those pictures to any different folder on the personal computer.

■ To disconnect USB cable safely

Drag [NO_NAME] or [Untitled] disk icon to the [Trash], and then disconnect the USB connection cable.

To disconnect USB cable safely

1) Double click the icon in task tray.
Hardware disconnect dialogue appears.
- Depending on your PC's settings, this icon may not be displayed.

2) Select [USB Mass Storage Device] and click [Stop].

3) Verify [MATSHITA SD Video Camera USB Device] is selected and click [OK].
- Click [OK], and you can safely disconnect the cable.

Software application uninstallation

Follow the steps below to uninstall any software applications that you no longer require.

1



Click [start]→([Settings]→) [Add or Remove Programs (Applications)] in [Control Panel].

2



Select the software application to be deleted, then click [Change/Remove] ([Change or Remove] or [Add/Remove]).
- Proceed with the uninstallation by following the on-screen instructions.
- Select [Panasonic SD Video Camera Web Driver] to uninstall the Web camera driver.
- To remove the Web camera driver from the PC's device manager, verify the driver by referring to "Verifying the driver" (P90), then delete the driver manually.

Verifying the driver

If the driver does not work properly, follow the steps below to verify if it has been recognized properly. Select the unit's mode, connect the unit to the PC via the USB cable, then verify the driver. (P83)

- With some PCs including those made by NEC, the Device Manager may not be displayed if a mode that places restrictions on the functions has been established. Consult the manufacturer or follow the steps in your PC's operating instructions to establish a mode in which all the functions can be used, then proceed with operation.

1



Select [start]→([Settings]→) [Control Panel]→([Performance and Maintenance]→) [System].

2



Display [Device Manager], and check whether the driver has been installed properly.

- Click the [Hardware] tab, then click [Device Manager].

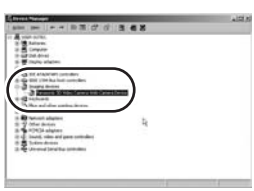
■ If the driver has been recognized properly

(When the unit is in the motion picture recording or still picture recording mode)

Windows XP:

[USB composite device] is displayed at [USB controller] and [USB video device] at [Imaging device].

- If two, three or more SD video cameras are connected, [USB video device #X (X: number)] may appear.



Windows 2000:

[Panasonic SD Video Camera Web Camera Device] appears at [Imaging device].

(When the unit is in PC Connection mode)

[USB Mass Storage Device] appears at [USB (Universal Serial Bus) controller].

■ If the driver has not been recognized properly

[!] or [Unknown device] appears at [USB (Universal Serial Bus) controller] or [Other devices], etc.
(Where the display will appear depends on the type of PC you are using.)
Disconnect the USB cable, uninstall then re-install the [Web Camera Driver] (P81) and connect the USB cable again.

In the following cases, the Web camera driver has not been installed properly.

- When an exclamation [!] mark appears at [USB composite device] under [USB (Universal Serial Bus) controller] or at [USB video device] under [Imaging device]
- When [Web Camera] is displayed at [Other devices]

Remove the driver from Device Manager, uninstall it (P89), re-install [Web Camera Driver] (P81), then conduct the connection procedure once more.

Approximate Number of Recordable Pictures on an SD Card

Number of recordable pictures

■ Picture quality and number of recordable pictures (using SD cards)

Picture size	2048 (2048×1512)		1280 (1280×960)	
Picture quality				
8 MB	2	4	7	12
16 MB	7	12	20	32
32 MB	18	28	45	73
64 MB	38	61	96	155
128 MB	75	120	185	300
256 MB	155	250	390	620
512 MB	310	490	770	1230
1 GB	630	990	1550	2470
2 GB	1280	2010	3160	5030
4 GB	2520	3950	6200	9870

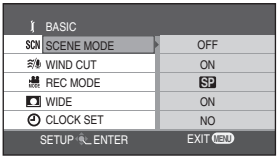
Picture size	640 (640×480)		HDTV (1920×1080)	
Picture quality				
8 MB	37	75	3	6
16 MB	92	185	10	16
32 MB	200	410	23	37
64 MB	430	850	50	80
128 MB	820	1640	98	155
256 MB	1710	3410	210	320
512 MB	3390	6780	410	640
1 GB	6790	13580	820	1290
2 GB	13820	27640	1670	2630
4 GB	27150	54290	3290	5170

- Usable capacity will be less.
- The number of recordable pictures depends on whether [] and [] are used together and on the subject being recorded.
- The numbers shown in the table are approximations.

Menu list

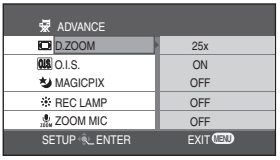
Motion picture recording menus

■ [BASIC]



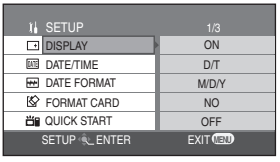
- [SCN] **SCENE MODE] (P46)**
- **[WIND CUT] (P42)**
- **[REC MODE] (P35)**
- **[WIDE] (P43)**
- **[CLOCK SET] (P29)**

■ [ADVANCE]



- **[D.ZOOM] (P38)**
- **[O.I.S.] (P44)**
- **[MAGICPIX] (P45)**
- **[REC LAMP] (P33)**
- **[ZOOM MIC] (P38)**

■ [SETUP]

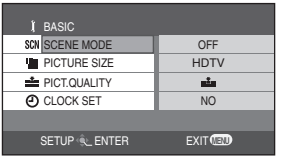


- **[DISPLAY] (P95)**
- **[DATE/TIME] (P30)**
- **[DATE FORMAT] (P29)**
- **[FORMAT CARD] (P68)**
- **[QUICK START] (P19)**
- **[POWER SAVE] (P95)**
- **[BEEP SOUND] (P95)**
- **[LCD AI] (P31)**
- **[LCD SET] (P30)**
- **[INITIAL SET] (P95)**
- **[DEMO MODE] (P95)**

Still picture recording menu

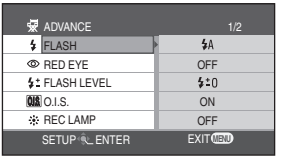
- For [SETUP] items, refer to the motion picture recording menus.

■ [BASIC]



- [SCN] **SCENE MODE] (P46)**
- **[PICTURE SIZE] (P55)**
- **[PICT.QUALITY] (P55)**
- **[CLOCK SET] (P29)**

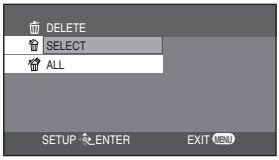
■ [ADVANCE]



- **[FLASH] (P57)**
- **[RED EYE] (P57)**
- **[FLASH LEVEL] (P58)**
- **[O.I.S.] (P44)**
- **[REC LAMP] (P33)**
- **[SHTR EFFECT] (P56)**

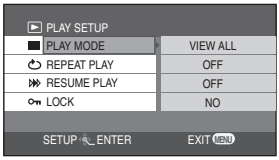
Motion picture playback menus

[DELETE]



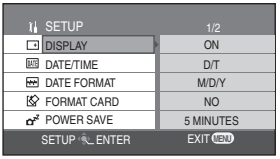
[SELECT] (P65)
[ALL] (P65)

[PLAY SETUP]



[PLAY MODE] (P62)
[REPEAT PLAY] (P62)
[RESUME PLAY] (P62)
[LOCK] (P67)

[SETUP]

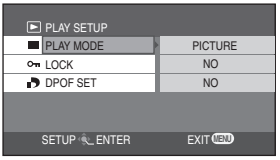


[DISPLAY] (P95)
[DATE/TIME] (P30)
[DATE FORMAT] (P29)
[FORMAT CARD] (P68)
[POWER SAVE] (P95)
[BEEP SOUND] (P95)
[LCD AI] (P31)
[LCD SET] (P30)
[TV ASPECT] (P74)

Still picture playback menus

- For [DELETE] and [SETUP] items, refer to the motion picture playback menus.

[PLAY SETUP]



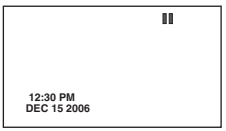
[PLAY MODE] (P62)
[LOCK] (P67)
[DPOF SET] (P69)

■ [DISPLAY]

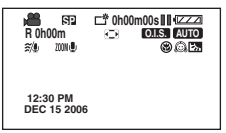
●OFF ●ON

The screen indications are selected as shown in the illustration below.

OFF



ON



■ [BEEP SOUND]

●OFF ●ON

This allows operations such as starting and ending recording to be signalled by a beep.

When [OFF] is set, no beep is heard when an operation such as recording is started or ended.

1 Beep

When you start recording or turn on the power. Also when deleting files, when the confirmation message appears while formatting and when this unit is recognized by the PC or the printer.

2 Beeps

When you pause recording or turn off the power.

2 Beeps 4 times

If you insert an SD card with the write protection switch set to [LOCK] when a recording mode has been selected. Check the sentence displayed on the screen. (P98)

■ [POWER SAVE]

●OFF ●5 MINUTES

[OFF]: The power saving function is not activated.

[5 MINUTES]:

When about 5 minutes passed without any operation, this unit automatically turns off to prevent the battery from running down. When you use this unit, turn it on again.

- In the following cases, the power may not turn off even when set [POWER SAVE]→[5 MINUTES].
 - – When connecting to the AC outlet (When using the AC adaptor)
 - – When connecting the unit to a PC or printer via the USB cable

■ [INITIAL SET]

●YES ●NO

When there is a menu that cannot be selected depending on a combination of functions, set to [YES] for changing the menu settings back to the initial shipping condition.

■ [DEMO MODE]

●OFF ●ON

This item is used to start the unit demonstration.

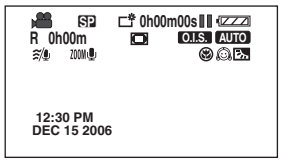
(Only when the mode dial is at the or position)

- If you set to [DEMO MODE]→[ON] without inserting an SD card, this unit is automatically set to the demonstration mode for introducing its functions. If any button is pressed or operated, the demonstration mode is canceled. If no operations take place for approx. 10 minutes, the demonstration mode automatically starts. To terminate the demonstration mode, insert an SD card, or set to [DEMO MODE]→[OFF]. For normal use, set this function to [OFF].

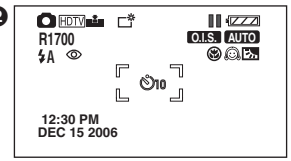
Indications

Recording indications

❶ Motion picture recording



❷ Still picture recording



	Remaining battery power
R 0h00m	Remaining time left for recording
0h00m00s	Time code
12:30 PM DEC 15 2006	Date/Time indication
●/❚❚ (Red)	Recording
❚❚	

Confirmatory indications

CANNOT RECORD.	Data writing to the SD card has failed.
CHECK CARD.	This card is not compatible or it cannot be recognized by the unit.
THIS CARD CANNOT RECORD IN VIDEO MODE.	An 8 MB or 16 MB SD card has been inserted in motion picture recording mode.
CARD LOCKED.	The write protection switch on the SD card is set to [LOCK]. (P16)
SCENE NUMBER IS FULL.	The number of still pictures or motion picture scenes (program) that can be recorded on 1 card is exceeded. Delete unnecessary scenes or insert a new SD card. (P15, 65)
PROGRAM NUMBER IS FULL.	
NO CARD.	No SD card is inserted. (P15)
CARD DOOR OPENED.	The unit is being operated with the card slot cover open.
CARD FULL.	The SD card is full. No further data can be recorded. Delete motion picture files or insert a new SD card. (P15, 65)
UNPLAYABLE CARD.	The data on the SD card cannot be played back.
FILE LOCKED.	You are attempting to erase protected files. (P67)
NOW ACCESSING. PLEASE DO NOT REMOVE CARD.	Data processing is now underway. Close the card slot cover and wait a few moments.
NO DATA.	There are not any still pictures and motion pictures recorded on the SD card.
CARD ERROR. PLEASE REFORMAT.	SD card formatting has failed.
CANNOT SET DPOF.	Writing of the DPOF setting to the SD card has failed.
CONTROL INFORMATION DIFFER. CANNOT USE THIS CARD IN VIDEO MODE.	The data on the card differs from the Video Mode standard. Save the data on a PC and then format the card before use.
SCENE IN PROTECTED PROGRAM OR PLAYLIST.	You are attempting to erase a protected scene or a scene in a play list created on another device.
LOW BATTERY.	The battery is low. Recharge it. (P18)

PUSH THE RESET SWITCH.	An irregularity in the equipment has been detected. Remove the SD card then press the reset switch to restart the unit. (P105)
CHANGE TO MANUAL MODE.	You have set the [AUTO/MANUAL/FOCUS] switch to [AUTO] and are attempting to set [SCENE MODE] from the menu screen.
CANCEL MAGICPIX MODE.	You are attempting to set [SCENE MODE] from the menu screen while MAGICPIX is set. (P45)
TURN OFF POWER LCD.	You are attempting to set [LCD AI] from the menu screen when the [POWER LCD] button has been pressed to brighten the LCD monitor.
NO INK IN PRINTER.	Check the connected printer.
NO PAPER IN PRINTER.	
PRINTER ERROR.	
PLEASE CONNECT AC ADAPTOR AND BATTERY.	The AC adaptor has not been connected or the battery has not been inserted while the unit is connected to the PC in PC Connection mode.
CHANGE MODE TO USE USB.	The USB cable is connected in the motion picture playback mode.
DISCONNECT USB CABLE.	Another mode has been selected from the PC Connection mode while the USB cable was still connected.
	Disconnect the USB cable and ensure that the battery has been inserted in the unit. Then connect the AC adaptor and the USB cable.
	This indication appears if the USB cable remains connected for more than 5 minutes when a printer or the PC is connected.
	The unit's power cannot be turned off which the unit is connected to the PC.

■ About recovery

When the SD card was accessed, you tried to play
shades of blue and white (P105) or faulty co
device was read, a control information
those shown below may be di
the error.)

REPAIRIN

en
[FIN

When the
battery is lo
[PLEASE CON
CHANGE BATTE

NO

[CANNOT USE THIS CA
MODE WITHOUT REPAIRI
ERROR.]

- When you recover files or delete play
 Therefore, be sure to follow the instructio
- When data recorded on another device is re
 the data on this unit or the other device. Always
- In the case that recovery fails, format the SD card
 mode or still picture playback mode).

Functions that cannot be used simultaneously

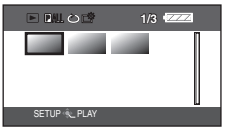
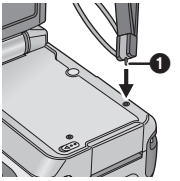
Some functions in this unit are disabled or cannot be selected due to the unit's specifications. The table below shows examples of functions restricted by various conditions.

Functions	Conditions which disable the functions
Digital zoom	• In still picture recording mode
MagicPix	
Backlight compensation	• When the MagicPix function is used • When the iris/gain is set
Soft skin (set and cancel)	• While recording motion pictures
Tele macro (set and cancel)	
MagicPix (set and cancel)	
Flash	• In motion picture recording mode • During demo mode
Scene mode	• When setting the [AUTO/MANUAL/FOCUS] switch to [AUTO] • When the MagicPix function is used
Zoom	• When the record button is pressed halfway in still picture recording

Functions	Conditions which disable the functions
Change of white balance	• When digital zoom (10× or higher) is used • When the MagicPix function is used
Adjusting the shutter speed, iris/gain	• When the MagicPix function is used • When the scene mode is used
Deleting files	• When the write protection switch on the SD card is set to [LOCK] (P16) • When the file is protected
Formatting	• When the write protection switch on the SD card is set to [LOCK] (P16)
DPOF setting	
LOCK setting	

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layed e built-in this unit	

Problem	Check points
Although this unit is correctly connected to a TV, playback images cannot be seen. **The images are vertical.**	• **Have you selected video input on the TV?** → Please read the operating instructions of your TV and select the channel that matches the input used for the connection. • **Is the [TV ASPECT] setting correct?** → Change the setting to match the aspect ratio of the TV. Press the menu button, then select [SETUP]→ [TV ASPECT]→[16:9] or [4:3].
Playback image is not clear. **Sound breaks up or noise affects the picture and/or sound.**	• **Noise may interfere with the picture and/or sound when the multi cable terminal becomes dirty. Wipe off any dirt with a soft cloth, then connect to the multi-connector.**
Images played back on TV are cut.	• **Depending on the TV connected, the sides of the images being played may not appear. We recommend widening the recording range of the objects you want to record beforehand.**
Recorded pictures are not clear.	• **Are you trying to record small or finely detailed objects with [PICT.QUALITY] set at []?** → If you try to record small or finely detailed objects with [PICT.QUALITY] set at [], the images may break up into a mosaic-like pattern. Record with [PICT.QUALITY] set at [] instead. (P55)
A scene recorded on an SD card cannot be deleted.	• **Is the scene locked?** → Locked scenes cannot be deleted. (P67) • **For the SD card, if its write protect switch is set to [LOCK], then deletion is disabled. (P16)**
The images on the SD card do not look normal.	• **The data may be destroyed. It may have been destroyed by static or electromagnetic waves. Record important data on a PC or other equipment as well. (P83)**
During playback, [UNPLAYABLE CARD.] is displayed.	• **Data with different formats or destroyed data is being played back.**
The indication disappears. **The screen is frozen.** **No operation can be performed.**	• **Turn off the power to this unit. If the power cannot be turned off, press the [RESET] button. You can also remove the battery and then reinsert it or disconnect the AC adaptor and then reconnect it. After that, turn on the power again. If normal operation is still not restored, detach the power connected, and consult the dealer who you purchased this unit from.**

Problem	Check points
Even if an SD card is formatted, it cannot be used.	• **Either this unit or the SD card may be damaged. Please consult a dealer. Use an SD card from 8 MB to 4 GB with this unit.**
The scenes are not correctly displayed in thumbnails.	• **Scenes displayed as thumbnails in shades of blue and white cannot be played back or deleted. If the scenes are unnecessary, format the SD card to erase the data.**  • **Please be aware that if an SD card is formatted, then all the data recorded on the card will be erased. Store important data on a PC, etc. When saving scenes recorded using this unit to a PC, you must use MotionSD STUDIO etc. (P76)**
"PUSH THE RESET SWITCH." is displayed.	• **The unit has automatically detected an error. To protect the data, remove the SD card and then press the [RESET] button with the projecting part ❶ of the hand strap. This will restart the unit. When you press the [RESET] button, the date and time setting will also be reset. Set the date and time again.**  • **Even after you press the [RESET] button, the indication may still appear repeatedly. If so, this unit needs repair. Detach the power connected, and consult the dealer who you purchased this unit from. Do not attempt to repair the appliance by yourself.**
If the SD card is inserted in another device, it is not recognized.	• **Check that the device is compatible with the capacity or type of SD card (SD Memory Card/ SDHC Memory Card) that you inserted. (P16)** → Refer to the operating instructions of the device for details.
Even if connected by the USB cable, this unit is not recognized by the PC.	• **Have you installed the Web camera driver?** → Install the driver, then check the connections. • **Have you set this unit to the correct mode?** → The unit is not recognized if it is set to motion picture playback mode. (P83) • **Select another USB terminal on the PC.** • **Check the operating environment. (P78, 79)** • **Turn on the power to this unit.**
When the USB cable is disconnected, an error message will appear on PC.	• **To disconnect the USB cable safely, double-click the  icon in the task tray and follow the instructions on the screen.**

Problem	Check points
The warning/alarm indication [˚] appears when this unit is operated in the WEB camera mode.	• **Did you press the record button or any other button?** → You cannot record onto the card in the WEB camera mode. • **Have you installed the Web camera driver?** → Install the driver, then check the connections.
The [PictBridge] indication flashes when this unit is connected to a PC.	• **The unit is connected to a Windows XP PC in still picture playback mode.** → Connect with a printer supporting PictBridge.
The [WEB] indication appears when the unit is connected to the printer.	• **The unit is connected to the printer in motion picture recording mode or still picture recording mode.** → Change the mode to still picture playback mode.

About condensation

When condensation forms on the unit, the lens will cloud up and the unit may not work properly. Make every effort to ensure that condensation does not form. If it does form, take the actions described below.

Causes of condensation

Condensation takes place when the ambient temperature or humidity is changed as follows.

- When this unit is brought inside from the cold (e.g. a ski slope) to a warm room.
- When this unit is moved from an air-conditioned car to outside.
- When a cold room has been warmed up quickly.
- When cool wind from an air conditioner is directly blown onto this unit.
- After summer afternoon showers of rain.
- When this unit is in a very humid place where the air is thick with steam. (e.g. a heated swimming pool)

When this unit is taken to a location with a significant temperature difference such as from a cold place to a hot place.

If, for example, you have used this unit for recording on a ski slope and are taking it into a heated room, place the unit inside a plastic bag, remove as much of the air from inside the bag as possible, then seal the bag. Leave the unit for about an hour in the room so the temperature of the unit is close to the ambient temperature of the room, then use it.

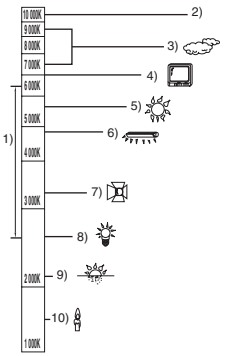
What to do with the lens is fogged up.

Remove the battery or disconnect the AC adaptor and leave the unit for about 1 hour. When the unit becomes close to the ambient temperature, the fog disappears naturally.

Explanation of terms

Automatic white balance

White balance adjustment recognizes the color of light and adjusts so the white color will become a purer white. The unit determines the hue of light that comes through the lens and white balance sensor, thereby judging the recording condition, and selects the closest hue setting.
This is called automatic white balance adjustment.
However, since the unit only stores white color information under several light sources, automatic white balance adjustment does not function normally under other light sources.



The illustration above shows the range over which the auto white balance functions.

1) The effective range of automatic white balance adjustment on this unit
2) Blue sky
3) Cloudy sky (rain)
4) TV screen
5) Sunlight
6) White fluorescent lamp
7) Halogen light bulb
8) Incandescent light bulb
9) Sunrise or sunset
10) Candlelight

Outside of the effective range of automatic white balance adjustment, the image will become reddish or bluish.
Even within the effective range of automatic white balance adjustment, the automatic white balance adjustment may not function properly if there is more than one light source. For light outside the functional auto white balance adjustment range, use the manual white balance adjustment mode.

White balance

The images recorded by the unit may become bluish or reddish under the influence of certain light sources. To avoid such phenomena, adjust the white balance.
White balance adjustment determines the white color under different light sources. By recognizing which is the white color under sunlight and which is the white color under a fluorescent light, the unit can adjust the balance among the other colors.
Since the white color is the reference for all the colors (that make up light), the unit can record pictures in a natural hue if it can recognize the reference color white.

Auto focus

The lens is moved forward or backward automatically to bring the subject into focus.

Auto focus has the following characteristics.

- Adjusts so that the vertical lines of a subject are seen more clearly.
- Attempts to bring an object with higher contrast into focus.
- Focuses on the screen center only.

Due to these characteristics, auto focus does not work correctly in the following situations. Record pictures in the manual focus mode.

Recording distant and close-up objects at the same time

Since the unit focuses on whatever is at the center of the screen, it is difficult to bring the background into focus when close-up objects are placed in focus. When recording people with distant mountains in the background, you cannot focus on both the subject which is close-up and the objects which are in the distance.

Recording a subject behind dirty or dusty window

The subject behind the window will not be focused because the focus is on the dirty window.

Similarly, when recording something on the opposite side of a road with heavy traffic, a vehicle that happens to pass by may be brought into focus.

Recording a subject that is surrounded by objects with glossy surfaces or by highly reflective objects

Since whatever is shiny or glistens is brought into focus, it is hard to focus on the subject to be recorded. The focus may become blurry when recording subjects at the seashore, in night views or in scenes involving fireworks or special lights.

Recording a subject in dark surroundings

The unit cannot focus correctly because the light information that comes through the lens decreases considerably.

Recording a fast-moving subject

As the focus lens-inside moves mechanically, it cannot keep up with a fast-moving subject.

When, for example, recording a sports event with fast moving subjects, the focus may lose its sharpness.

Recording a subject with little contrast

It is easy to bring subjects with a sharp contrast or vertical lines or stripes into focus. This means that a subject with little contrast, such as a white wall, may become blurry because the unit achieves focus based upon the vertical lines of an image.

Concerning MPEG2 motion pictures

“MPEG” stands for Moving Pictures Experts Group. It refers to a format for compressing video.

MPEG2 enables motion pictures to be played back more smoothly and attractively by sending the image data at a rate of 30 frames per second.

CLASS 2 (SD Speed Class Rating Class 2)

This indicates a Class 2 rating in the high speed standards (SD Speed Class) stipulated by the SD Card Association for high speed writing between SD compatible products and SD Memory cards.

If you use a Class 2 card compatible with the SD Speed Class in an SD compatible product, you can obtain stable recording by using a SD card conformed with Class 2 or more.

Cautions for Use

About this unit

- The unit and SD card become warm after long operation, but this is not a malfunction.

Keep the unit away from magnetized equipment/mobile phones, microwave ovens, TVs and video game equipment.

- If you use the unit on or near a TV, the images or sound may be disturbed due to electromagnetic wave radiation.
- Do not use near cell phone because doing so may cause noise to adversely affect the picture and sound.
- Recordings may be damaged, or images may be distorted, by the strong magnetic fields created by speakers or large motors.
- Electromagnetic wave radiation generated by digital circuits including microprocessors may adversely affect the unit, causing the disturbance of images and sounds.
- If the unit is affected by such equipment and does not function properly, remove the battery or disconnect the AC adaptor. Then insert the battery again or connect the AC adaptor again.

Do not use the unit near radio transmitters or high-voltage cables.

- If you record pictures near radio transmitters or high-voltage cables, recorded images or sounds may be adversely affected.

Make sure to use the supplied cords and cables. If you use optional accessories, use the cords and the cables supplied with them.

Do not extend the cords and the cables.

Do not spray insecticides or volatile chemicals onto the unit.

- If the unit is sprayed with such chemicals, its body may be marred and the surface finish may peel off.
- Do not leave rubber or plastic products in contact with the unit for a long time.

When you use the unit in a sandy or dusty place such as a beach, do not let sand or fine dust get into the body and terminals of the unit.

Also, keep the unit away from sea water.

- Sand or dust may damage the unit. (Care should be taken when inserting and removing an SD card.)
- If sea water splashes onto the unit, wipe off the water with a well wrung cloth. Then wipe the unit again with a dry cloth.

When carrying the unit, do not drop or bump it.

- A strong impact can break the unit's casing, causing it to malfunction.

Do not use benzine, paint thinner or alcohol for cleaning the unit.

- Before cleaning, detach the battery or pull out the AC mains lead from the AC mains socket.
- The camera body may be discolored and the surface finish may peel off.
- Wipe the unit with a soft dry cloth to remove dust and fingerprints. To remove stubborn stains, thoroughly wring a cloth that has been soaked in a neutral detergent diluted with water and wipe the unit with it. Afterwards, wipe it with a dry cloth.
- When you use a chemical dust cloth, follow the instructions.

Do not use the unit for surveillance purposes or other business uses.

- If you use the unit for a long time, heat will build up inside it and this may cause a malfunction.
- The unit is not intended for business use.

When you are not going to use the unit for an extended time

- When storing the unit in a cupboard or cabinet, it is recommended that you put a desiccant (silica gel) in with it.

About the battery

The battery used in this unit is a rechargeable lithium-ion battery. It is susceptible to humidity and temperature and the effect increases the more the temperature rises or falls. In cold areas, the full charge indication may not appear or the low battery indication may appear about 5 minutes after starting use. At high temperatures, the protection function may be triggered, making it impossible to use the unit.

Be sure to detach the battery after use.

- If the battery is left inserted, a minute amount of current continues to flow even if the unit's power is off. Keeping the unit in this state may result in over discharge of the battery. The battery may become unusable after it is charged.
- The battery should be stored in the vinyl bag so metal does not come into contact with the terminals.
- The battery should be stored in a cool place free from humidity, with as constant temperature as possible. (Recommended temperature: 15 °C to 25 °C (59 °F to 77 °F), Recommended humidity: 40% to 60%)
- Extremely high temperatures or low temperatures will shorten the life of the battery.
- If the battery is kept in high-temperature, high-humidity, or oily-smoky places, the terminals may rust and cause malfunctions.
- To store the battery for a long period of time, we recommend you charge it once every year and store it again after you have completely used up the charged capacity.
- Dust and other matter attached to the battery terminals should be removed.

Prepare spare batteries when going out for recording.

- In cold places such as a ski resort, the period during which you can record pictures is shortened.
- When you travel, do not forget to bring an AC adaptor (supplied) so that you can recharge the batteries at your destination.

If you drop the battery accidentally, check to see if the terminals are damaged.

- Attaching a battery with damaged terminals can damage the unit.

Do not throw old battery into fire.

- Heating a battery or throwing it into a fire may result in an explosion.
- If the operating time is very short even after the battery has been recharged, the battery has worn out. Please purchase a new battery.

About the AC adaptor

- Be sure to use the supplied AC adaptor.
- If you use the AC adaptor near a radio, radio reception may be disturbed. Keep the AC adaptor 1 m (3.3 feet) or more away from the radio.
- When using the AC adaptor, it may generate whirring sounds. However, this is normal.
- After use, be sure to disconnect the AC adaptor. (If it is left connected, about 0.1 W of current is consumed at most.)
- Always keep the electrodes of the AC adaptor and battery clean.

Put this unit near the outlet to make it easy for the interrupting device (plug) to reach it.

About charging errors
When the status indicator flashes rapidly or slowly, one of the following situations may be to blame.

When the status indicator flashes at intervals of about 6 seconds (on for about 3 sec. and off for about 3 sec.):

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- The batte
 temperature
 low. Wait unti
 temperature is
 charging the batt
 battery still fails to
 may be wrong with t
 adaptor etc. Contact y

When the status indicat

- Charging is completed.
- Although charging is not co
 trouble may have occurred i
 adaptor or battery when the st
 indicator is off. Contact your dea

About the SD card



- The memory capacity indicated on the label of an SD Card is the total of the capacity for copyright protection and management and the capacity which can be used on the unit, a PC etc.
- During prolonged use, the unit's surfaces and the SD card will heat slightly: This is normal.

When inserting or removing th
card, always set the [ON/OFF]
to [OFF].

When the access lamp is
(During access to the SD
open the card slot cove
SD card, rotate the m
the power, or cause
impacts.

Do not leave the
where there is
direct sunlig

Specifications

SD Video Camera: Information for your safety

Power source: DC 9.3 V (AC adaptor)/7.4 V (Battery)
Power consumption: When recording: 3.9 W (AC adaptor)/3.5 W (Battery)

Signal system	EIA Standard: 525 lines, 60 fields NTSC color signal
Image sensor	1/6-inch 3CCD image sensor Total pixels Approx. 800 K×3 Effective pixels Motion picture: Approx. 640 K×3 (4:3)/Approx. 540 K×3 (16:9) Still picture: Approx. 710 K×3 (4:3)/Approx. 540 K×3 (16:9)
Lens	Auto iris, 10× power zoom F1.8 to F2.8 (f = 3.0 mm to 30.0 mm) **35 mm equivalent** Motion picture: 45.6 mm to 456 mm (4:3)/ 46.7 mm to 467 mm (16:9) Still picture: 43.4 mm to 434 mm (4:3)/ 47.0 mm to 470 mm (16:9) Tele-macro function provided (full range AF)
Filter diameter	37 mm
Zoom	10× optical zoom, 25/700× digital zoom
Monitor	2.8″ wide LCD monitor (approx. 210 K pixels)
Microphone	Stereo (with a zoom function)
Speaker	1 dynamic type
White balance adjustment	Auto tracking white balance system
Standard illumination	1,400 lx
Minimum required illumination	12 lx (Low light mode: 1/60) 1 lx (MagicPix mode)
Recording media	SD Memory Card: 8 MB/16 MB/32 MB/64 MB/128 MB/256 MB/512 MB/1 GB/2 GB (Maximum) (FAT12 and FAT16 format corresponding) SDHC Memory Card: 4 GB (Maximum) (FAT32 format corresponding)
Video output level	1.0 Vp-p 75 Ω
S-Video output level	Y Output: 1.0 Vp-p, 75 Ω C Output: 0.286 Vp-p, 75 Ω

Audio output level (Line)	316 mV, 600 Ω
Headphones output level	77 mV, with 32 Ω load
USB	Card reader/writer function (No copyright protection support) Hi-Speed USB compliant (USB 2.0) PictBridge-compliant Web Camera function
Flash	GN 4.5 Available flash range: approx. 1 m to 2 m (3.3 feet to 6.6 feet)
Dimensions	Approx. 49.9 mm (W) × 99.7 mm (H) × 81.3 mm (D) Approx. 1 31/32 inch (W) × 3 15/16 inch (H) × 3 7/32 inch (D) (excluding the projecting parts)
Mass	Approx. 250 g (8.82 oz)
Mass in operation	Approx. 290 g (10.23 oz) (with SD Card and supplied battery)
Operating temperature	0 °C to 40 °C (32 °F to 104 °F)
Operating humidity	10% to 80%
Battery operation time	See page 18.

Motion pictures

Compression	MPEG2 (SD-Video standard compliant)
Picture size	704×480
Transfer rate	XP : Approx. 10 Mbps (VBR), 30 fps SP : Approx. 5 Mbps (VBR), 30 fps LP : Approx. 2.5 Mbps (VBR), 30 fps
Audio compression	MPEG1-Layer2 compliant (stereo)

Still pictures

Compression	JPEG (Design rule for Camera File system, based on Exif 2.2 standard), DPOF corresponding
Picture size	2048×1512, 1280×960, 640×480, 1920×1080 (HDTV)

WEB camera

Compression	Motion JPEG-compliant
Picture size	320×240 pixels (QVGA)
Frame rate	Approx. 6 fps

AC adaptor: Information for your safety

Power source:	AC 100 V to 240 V, 50/60 Hz
Input capacitance:	0.25 A
Output:	DC 9.3 V 1.0 A

Battery pack: Information for your safety

Maximum voltage:	DC 8.4 V
Nominal voltage:	DC 7.4 V
Rated capacitance:	760 mAh

Limited Warranty

Panasonic Consumer Electronics Company, Division of Panasonic Corporation of North America
One Panasonic Way, Secaucus, New Jersey 07094

Panasonic Puerto Rico, Inc.
Ave. 65 de Infantería, Km. 9.5, San Gabriel Industrial Park, Carolina, Puerto Rico 00985

PANASONIC SD Products
Limited Warranty

Limited Warranty Coverage

If your product does not work properly because of a defect in materials or workmanship, Panasonic Consumer Electronics Company or Panasonic Puerto Rico, Inc. (collectively referred to as "the warrantor") will, for the length of the period indicated on the chart below, which starts with the date of original purchase ("warranty period"), at its option either (a) repair your product with new or refurbished parts, or (b) replace it with a new or a refurbished product. The decision to repair or replace will be made by the warrantor.

Product or Part Name	Parts	Labor
SD Multi AV Device, SD Mobile Printer (except items listed below)	One (1) year	Ninety (90) days
CCD Image Sensor	Six (6) months	Ninety (90) days
Rechargeable Battery Pack, SD Memory Card, AC Adaptor, USB Reader-Writer (in exchange for defective item)	Ninety (90) days	Not Applicable

During the "Labor" warranty period there will be no charge for labor. During the "Parts" warranty period, there will be no charge for parts. You must carry-in or mail-in (prepaid) your product during the warranty period. If non-rechargeable batteries are included, they are not warranted. This warranty only applies to products purchased and serviced in the United States or Puerto Rico. This warranty is extended only to the original purchaser of a new product which was not sold "as is".
A purchase receipt or other proof of the original purchase date is required for warranty service.

Carry-In or Mail-In (Prepaid) Service

For Carry-In or Mail-In (prepaid) Service in the United States call 1-800-272-7033.
For assistance in Puerto Rico call Panasonic Puerto Rico, Inc.
(787)-750-4300 or fax (787)-768-2910.

Limited Warranty Limits And Exclusions

This warranty ONLY COVERS failures due to defects in materials or workmanship, and DOES NOT COVER normal wear and tear or cosmetic damage. The warranty ALSO DOES NOT COVER damages which occurred in shipment, or failures which are caused by products not supplied by the warrantor, or failures which result from accidents, misuse, abuse, neglect, bug infestation, mishandling, misapplication, alteration, faulty installation, set-up adjustments, misadjustment of consumer controls, improper maintenance, power line surge, lightning damage, modification, or commercial use (such as in a hotel, office, restaurant, or other business), rental use of the product, service by anyone other than a Factory Servicenter or other Authorized Servicer, or damage that is attributable to acts of God.

THERE ARE NO EXPRESS WARRANTIES EXCEPT AS LISTED UNDER "LIMITED WARRANTY COVERAGE". THE WARRANTOR IS NOT LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES RESULTING FROM THE USE OF THIS PRODUCT, OR ARISING OUT OF ANY BREACH OF THIS WARRANTY.
(As examples, this excludes damages for lost time, travel to and from the servicer, loss of media or images, data or other memory content. The items listed are not exclusive, but are for illustration only.)
ALL EXPRESS AND IMPLIED WARRANTIES, INCLUDING THE WARRANTY OF MERCHANTABILITY, ARE LIMITED TO THE PERIOD OF THE LIMITED WARRANTY.
Some states do not allow the exclusion or limitation of incidental or consequential damages, or limitations on how long an implied warranty lasts, so the exclusions may not apply to you.
This warranty gives you specific legal rights and you may also have other rights which vary from state to state. If a problem with this product develops during or after the warranty period, you may contact your dealer or Servicenter. If the problem is not handled to your satisfaction, then write to the warrantor's Consumer Affairs Department at the addresses listed for the warrantor.

PARTS AND SERVICE WHICH ARE NOT COVERED BY THIS LIMITED WARRANTY ARE YOUR RESPONSIBILITY.

Customer Services Directory

For Product Information, Operating Assistance, Literature Request, Dealer Locations, and all Customer Service inquiries please contact:

1-800-272-7033, Monday-Friday 8:30am-8pm EST.

Web Site: http://www.panasonic.com/consumersupport

You can purchase parts, accessories or locate your nearest servicenter by visiting our Web Site.

Accessory Purchases:

Purchase Parts, Accessories and Instruction Books online for all Panasonic Products by visiting our Web Site at:

http://www.pasc.panasonic.com

or, send your request by E-mail to:
npcparts@us.panasonic.com

You may also contact us directly at:
1-800-332-5368 (Phone) 1-800-237-9080 (Fax Only) (Monday – Friday 9 am to 9 pm, EST.)
Panasonic Services Company
20421 84th Avenue South,
Kent, WA 98032
(We Accept Visa, MasterCard, Discover Card, American Express, and Personal Checks)

Product Repairs

Centralized Factory Servicenter

MAIL TO : Panasonic Services Company
410B Airport Road
Elgin, IL 60123-9333
Attention: Digital Camcorder Repair Dept.

Please carefully pack and ship, prepaid and insured, to the Elgin Centralized Factory Servicenter.
Customer's in Puerto Rico, please ship or carry in to location below ("Service in Puerto Rico").

Service in Puerto Rico

Panasonic Puerto Rico, Inc.:
Ave. 65 de Infantería, Km. 9.5, San Gabriel Industrial Park, Carolina, Puerto Rico 00985
Phone (787) 750-4300 Fax (787) 768-2910

As of June 2006

Request for Service Notice

Please photocopy this form when making a request for service notice, in the unlikely event this product needs service.

Request for Service Notice:

- Please include your **proof of purchase.** (Failure to do so will delay your repair.)
- To further speed your repair, please provide an explanation of what is wrong with the unit and any symptom it is exhibiting.

Mail this completed form and your Proof of Purchase along with your unit to:

Panasonic Services Company
410B Airport Road
Elgin, IL 60123-9333
Attn: Digital Camcorder Repair Dept.

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